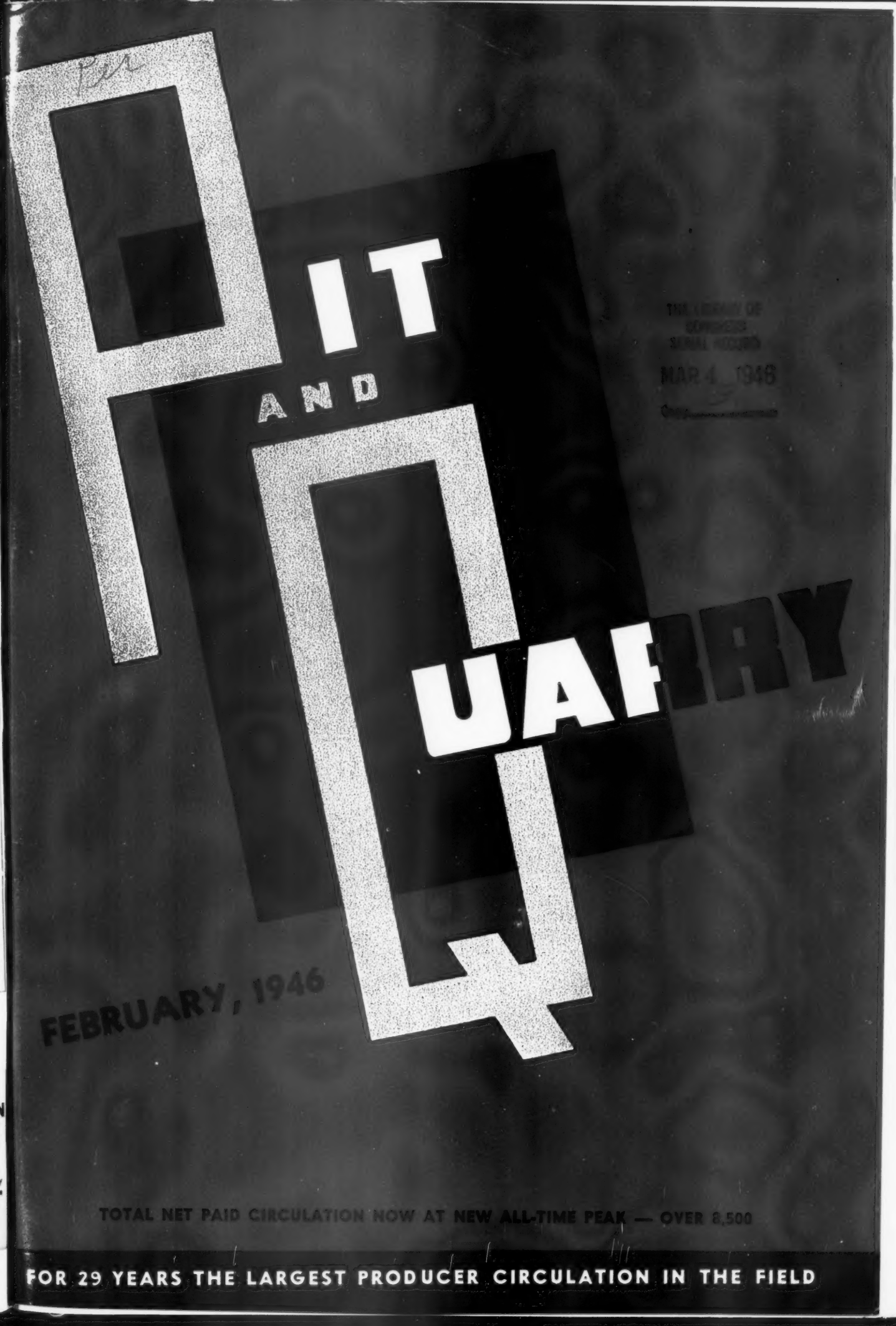
PIT
AND
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FEBRUARY, 1946
TOTAL NET PAID CIRCULATION NOW AT NEW ALL-TIME PEAK — OVER 8,500
FOR 29 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

THE LIBRARY OF CONGRESS SERIAL RECORD
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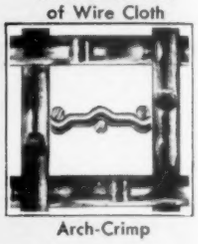
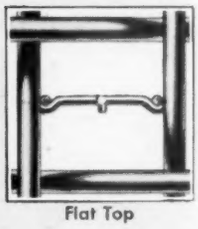
# LUDLOW-SAYLOR

Hook Strip for Coarser Grades of Wire Cloth

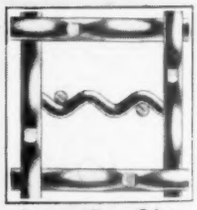


Arch-Crimp

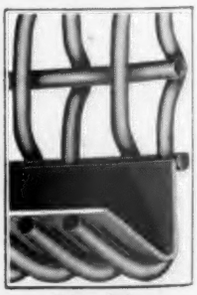
Double-Crimp



Flat Top



Intermediate-Crimp



Edge Strip

NINETY YEARS of precision engineering, of striving for perfection, lie behind the rugged construction and accurately sized openings of Ludlow-Saylor wire screens. The same careful research has developed Super-Loy — the abrasion resistant, durable steel alloy, of which they are made.

Whether engineered to meet your specific requirements, or selected from our wide variety of standard sizes and weaves, these wire cloths and wire screens give the maximum effective performance obtainable—and permit the maximum in efficient and economical operation.

Our Bent Edges, Edge Strips, and Hook Strips are accurately built to fit your equipment.

Our

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Anniversary

1856-1946

**The LUDLOW-SAYLOR WIRE COMPANY**

**614 South Newstead Ave. ST. LOUIS 10, MISSOURI**

# "TOUGH" HANDLING JOBS MADE EASY WITH LINK-BELT CONVEYORS

14-ton load of limestone, ready for dumping into receiving hopper of inclined Link-Belt apron conveyor feeding the primary crusher, located nearby on quarry floor.

● Here's an excellent example of solving a "tough" handling job at the Warner Co.'s Cedar Hollow plant. The problem was how to get enormous lumps of limestone blasted from quarry face, into primary crusher at a uniform rate, with prompt release of quarry trucks, and without choking or stalling the crusher. Link-Belt engineers worked out a system and installed a specially designed apron conveyor, 5-ft. wide and 60-ft. centers, inclined 25° from horizontal, with a capacity of 300 T.P.H. The hopper was built to withstand the terrific impact of 14 tons of rock dumped from truck. Lumps measuring 4 to 6 ft. across and weighing 2½ tons are handled. Crushed stone is fed uniformly by a reciprocating feeder to a belt conveyor extending to secondary crusher.

Check your materials handling and power transmission machinery plans with Link-Belt engineers.

**LINK-BELT COMPANY**

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8.
Offices in principal cities.

Illustrating conveyor apron, bottom of truck dump hopper, and the takeup bearings which support the conveyor foot shaft.

View of fully loaded Link-Belt apron conveyor from truck dump hopper to primary crusher. Large lump in foreground measured 6-ft. across. In background is inclined belt conveyor delivering crushed stone to secondary crusher.

**LINK-BELT CONVEYORS**

PREPARATION EQUIPMENT . . . POWER TRANSMISSION MACHINERY

OTHER LINK-BELT EQUIPMENT INCLUDES: Complete Sand, Gravel and Stone Washing Plants . . . Ready-Mixed Concrete Plant Equipment . . . Lime Handling Equipment . . . Screens (vibrating, rotary and conical) . . . Washers and Classifiers of the screw, log, flight, Shaw and conical types . . . Dewatering Rotoscoops and Screw Conveyors . . . All Types of Elevators and Conveyors . . . Roto-Louvre Dryers and Coolers . . . Skip Hoists . . . Car Spotters . . . Portable Conveyors and Bucket Loaders . . . Silent and Roller Chain Drives . . . Speed Reducers . . . Variable Speed Transmissions . . . Chains (Malleable Iron, Promal and Steel) . . . Sprockets . . . Elevator Buckets . . . Gears . . . Clutches . . . Couplings . . . Self-Aligning Ball and Roller Bearing Units . . . Babbitted Bearing Units, etc. Catalogs on request. 9907

PIT AND QUARRY, February, 1946, Vol. 38, No. 8. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $2 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.

# More Strength—Another Reason Upson-Walton Tackleblocks are Better Tackleblocks

NOT THIS HOOK— — *But* THIS HOOK
ON ALL UPSON-WALTON TACKLEBLOCKS

In the past, manila rope blocks have never even come close to equaling the strength of the rope used with them. Upson-Walton engineers have now developed a block which comes closer to equaling that strength than was ever possible before with *any* standard block.

*It can safely withstand much heavier loads—in some cases loads twice as heavy as other blocks!*

One reason for the greatly increased strength of Upson-Walton blocks is the newly designed hoist hook which is now standard equipment on all *U-W blocks, both steel and wood.* These hooks are not like the old blacksmith type round hooks which were simply bent to shape; they are *drop forged* to size and shape with substantially heavier section where it counts the most.

*We will gladly send you, upon request, comparative specifications including the new safe working loads for U-W manila rope blocks.*

U-W

Established 1871

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## THE UPSON-WALTON COMPANY

*Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks*

MAIN OFFICES AND FACTORY: CLEVELAND 13, OHIO

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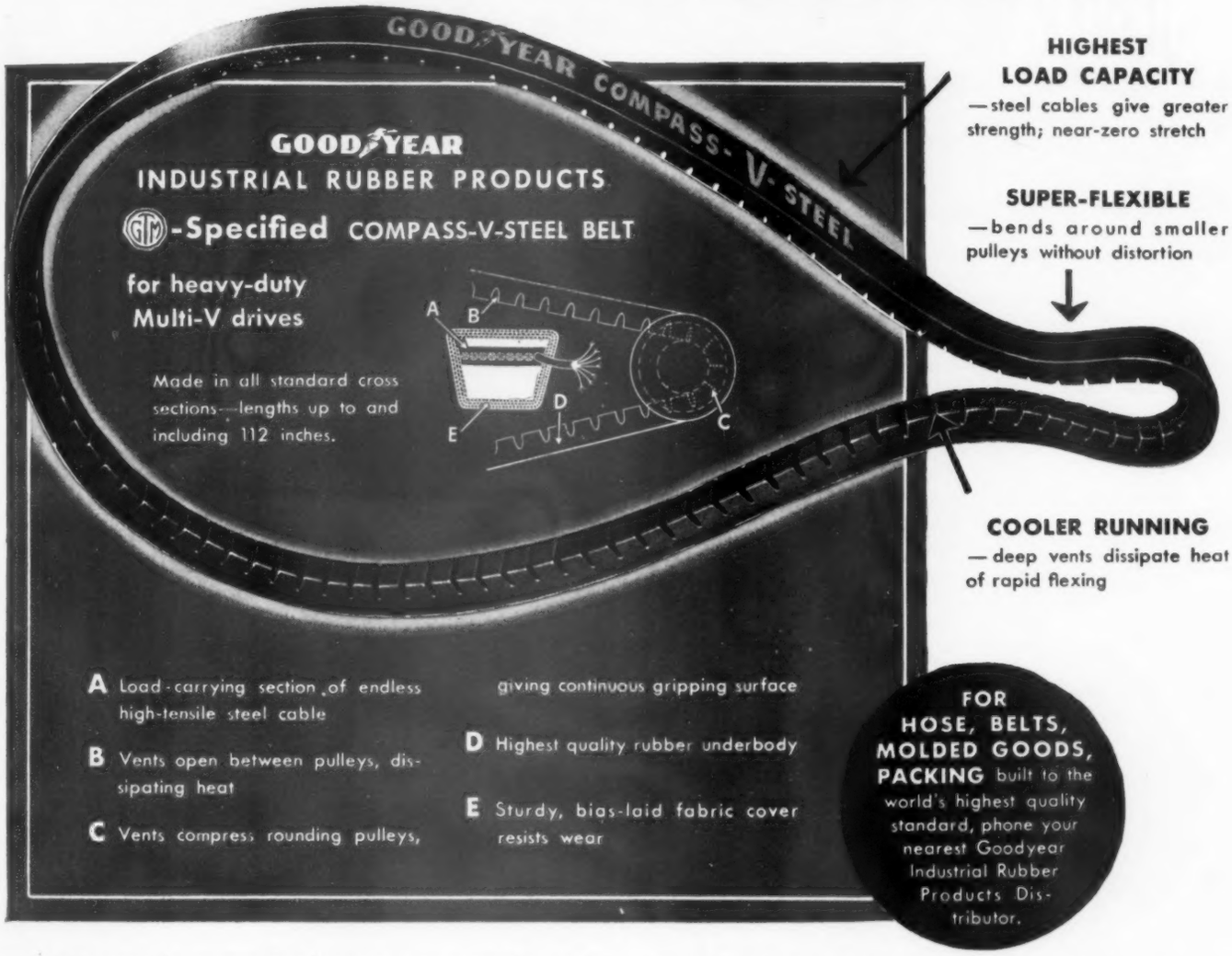
# Never a V-Belt like this before!

## *Sets new performance standards on most critical drives*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for heavy-duty
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Made in all standard cross sections—lengths up to and including 112 inches.
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C
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HIGHEST LOAD CAPACITY
—steel cables give greater strength; near-zero stretch
SUPER-FLEXIBLE
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COOLER RUNNING
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A Load-carrying section of endless high-tensile steel cable
B Vents open between pulleys, dissipating heat
C Vents compress rounding pulleys, giving continuous gripping surface
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HERE is a revolutionary new version of Goodyear's famed steel-cable V-belt — the COMPASS-V-STEEL belt. Developed to meet military needs for a super-belt, it now comes to industry with a performance record that surpasses all previous standards. For, as the adjoining blueprint shows, it combines the unrivaled strength of steel-cable load carriers with the new flex-ventilated construction that dissipates heat of flexion, permits bending around smaller pulleys and gives you flat belt flexibility in a V-drive.

This results in many standout advantages. Lower power consumption! Highest heat resistance! Greater strength and shock-load capacity. Practically no creep or slip, no R.P.M. loss! Near-zero stretch — minimum maintenance and adjustments. Widest speed range — from 10 feet per minute up to 10,000! It's the world's most efficient V-belt — *proved on more than 3,000,000 wartime installations!*

Operating-wise, this means you can handle heavier loads, get longer belt life by re-equipping present drives with COMPASS-V-STEEL — or you can get equal efficiency with fewer belts, smaller sheaves and shorter centers, eliminating many present monstrosity drives. For full particulars, horsepower ratings and other data, call in the G.T.M. — Goodyear Technical Man. Just write: Goodyear, Akron 16, Ohio or Los Angeles 54, California.

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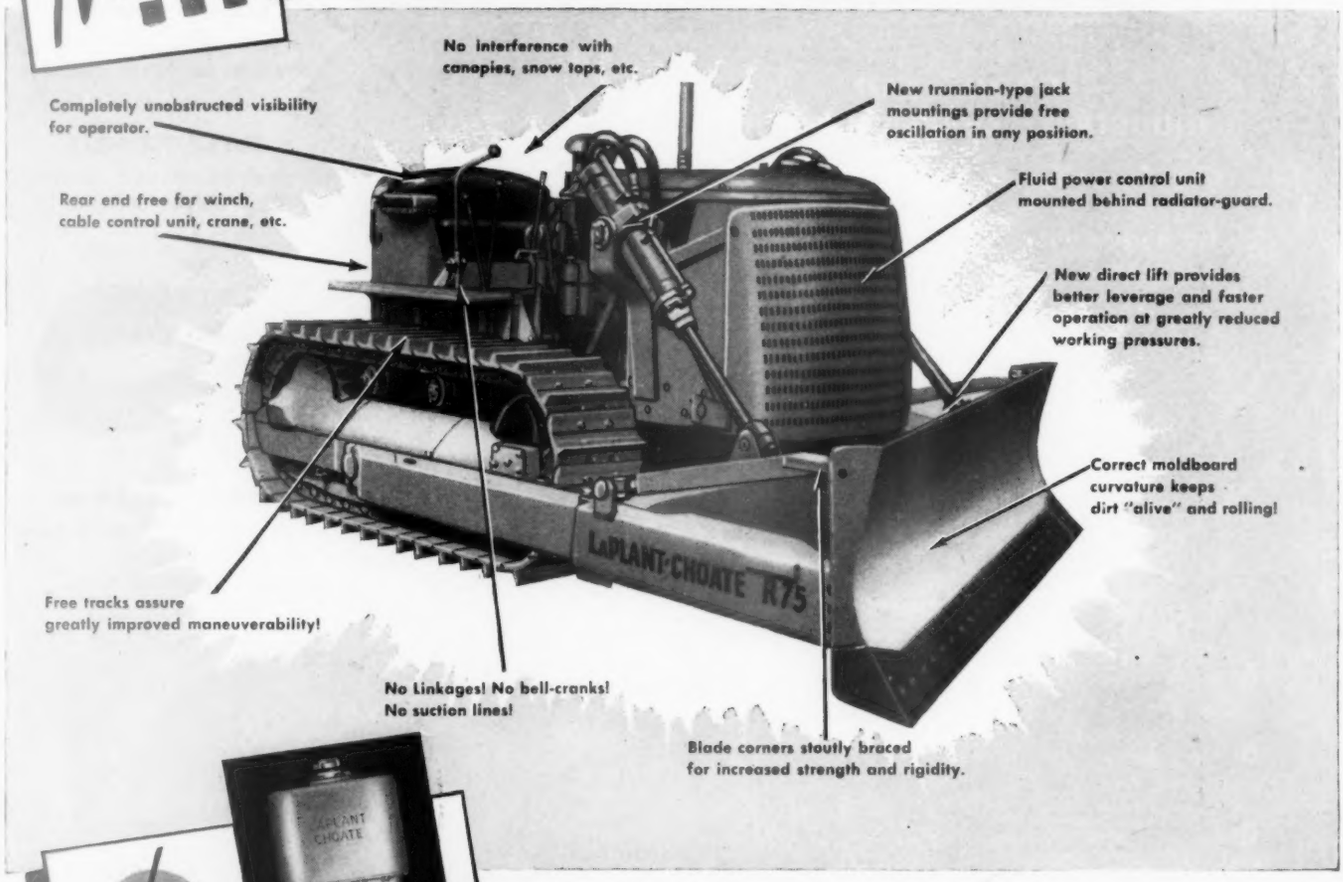
# NOW! ...a hydraulic dozer

## ...with all the speed and simplicity of a cable machine!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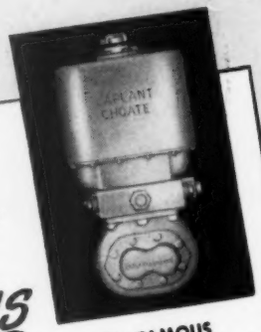
Correct moldboard curvature keeps dirt "alive" and rolling!
LaPLANT-CHOATE R75
Free tracks assure greatly improved maneuverability!
No Linkages! No bell-cranks! No suction lines!
Blade corners stoutly braced for increased strength and rigidity.

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**"fluid power control"**

Pump, valve and oil reservoir are all combined into a single compact unit that mounts on the front of the tractor behind the radiator guard. This new "closed system" design completely eliminates long suction lines, reduces the hazard of leaks and assures greatly increased speed and efficiency. In addition, the entire unit is skillfully engineered and precision built for utmost simplicity, easy servicing, and long, trouble-free operation at lowest possible cost.

Here at last is a dozer that gives you all the advantages of hydraulic operation—powerful "down pressure" and positive blade control — *plus* new dependability, simplicity and fast blade action that will compare favorably with any cable dozer you've ever used. Developed for war and thoroughly proved under tough combat conditions, this new LaPlant-Choate machine has already been hailed as the greatest dozer advancement in over a decade. Moreover, it can be obtained with either straight or angling blade for "Caterpillar" D-8 and D-7 tractors, while other LaPlant-Choate hydraulic models are available for the smaller D-6, D-4 and D-2 sizes. See your LaPlant-Choate distributor today for complete details. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa; San Leandro, Calif.

# LaPLANT-CHOATE

*Engineered Earthmoving*

lowest possible cost per yard

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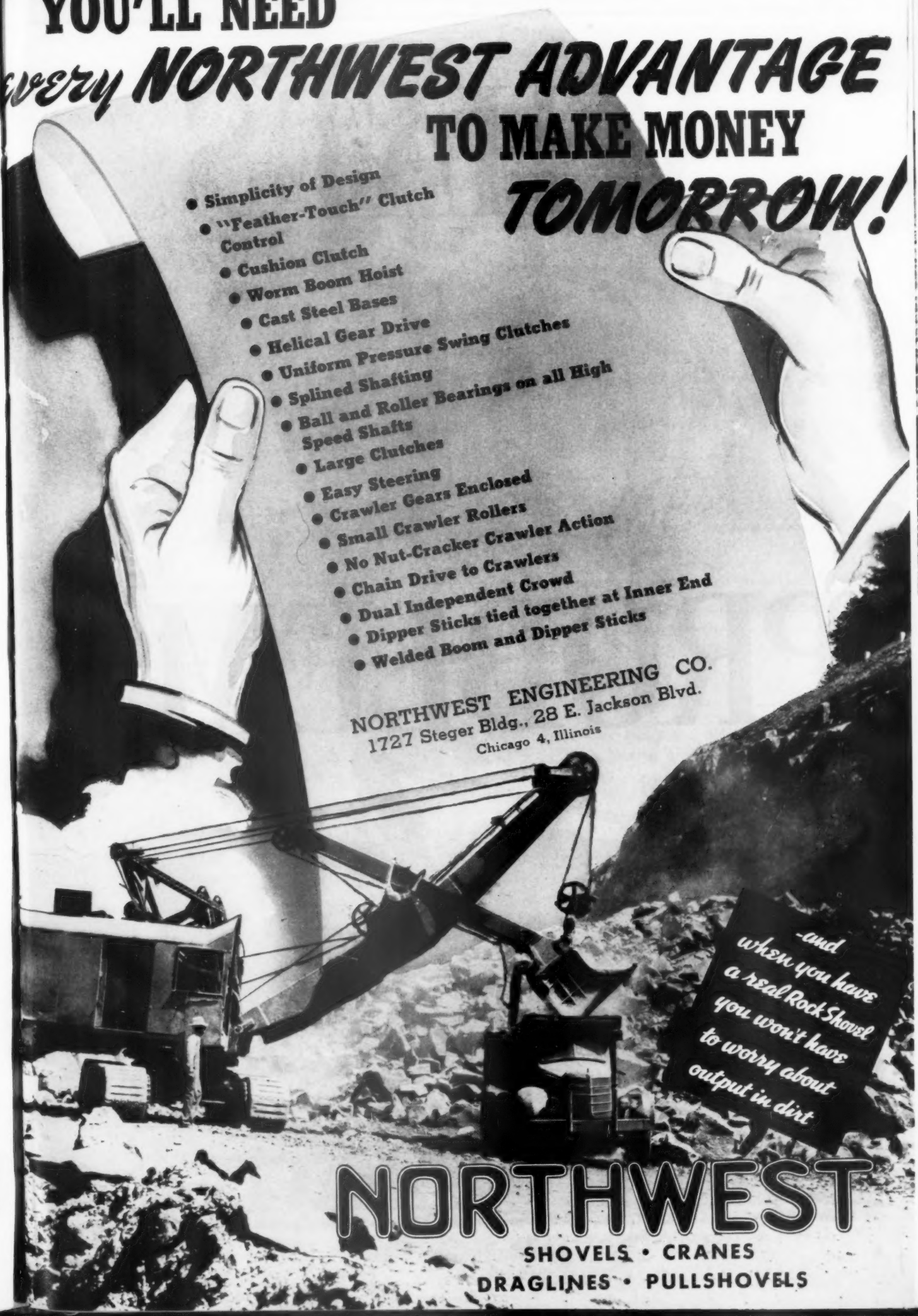

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**Are you looking for practical ways to train inexperienced men faster?**

Your Socony-Vacuum Representative also teaches "green" help When, Where and How to lubricate every machine you operate.

***Why Be Satisfied Merely With "Gas and Oil" When You Can Get Complete Service!***

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## STANDARD 2000-HP TRI CLAD MOTORS NOW AVAILABLE

## THEY GIVE EXTRA PROTECTION 3 ways

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**2** **Extra protection from electrical breakdown**—Windings of Formex* wire, strongly bonded with oil- and moisture-resistant synthetic resins, stand up under abrasion or "heat-shock."

**3** **Extra protection from operating wear and tear**—Sleeve or ball bearings, in dust-tight housings. Sleeve-bearing design is a further refinement of well-proved Tri-Clad bearing proportions, with cast-in "air seal" to further insure oil tightness of the housing.

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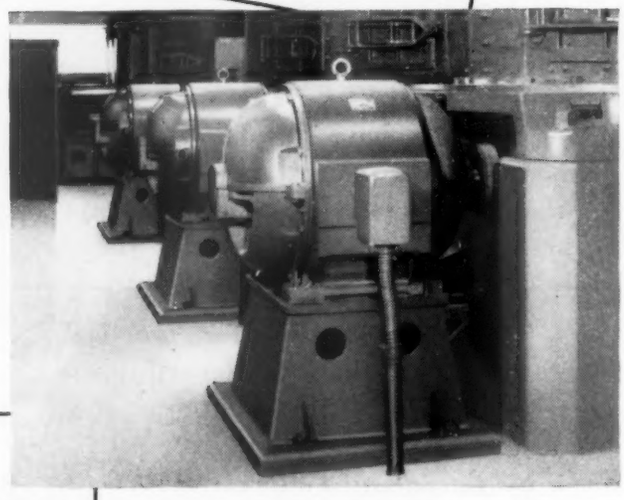
The Tri-Clad motor, in its wide range of types and sizes, is industry's most popular integral-hp motor. Chances are there's a standard Tri-Clad to meet your requirements "on the nose." For information on G.E.'s complete line of Tri-Clad motors, ask for Bulletin GEA-3580. *General Electric Company, Schenectady 5, N. Y.*



Three of the new, large Tri-Clad motors, each rated 200 hp, 1200 rpm, driving coal pulverizers in a Southern steam-electric plant

*Trade-mark reg. U.S. Pat. Off.

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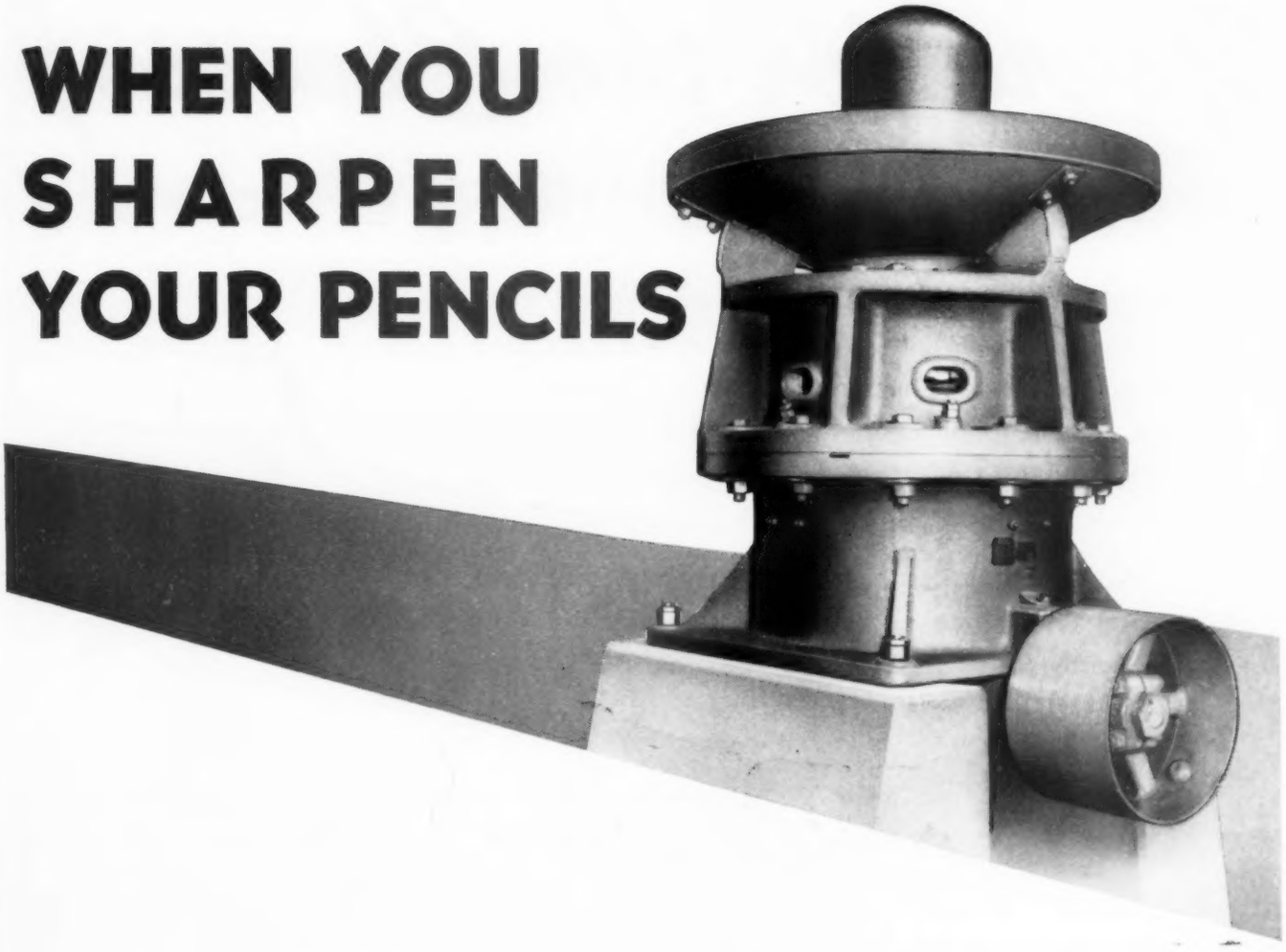

and begin to figure on ways to increase production, be sure to include the Traylor Multi-Stage Fine Reduction Crusher in your plans. It is an exceptional machine that is outstanding in its field and will fit into your plans admirably well.

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The Multi-Stage Fine Reduction Crusher is built in a range of sizes that make it widely applicable where a fine product is required in large capacity.

Ask our representative to call and discuss this machine with you or write for Bulletin 1113 for more details of this machine.

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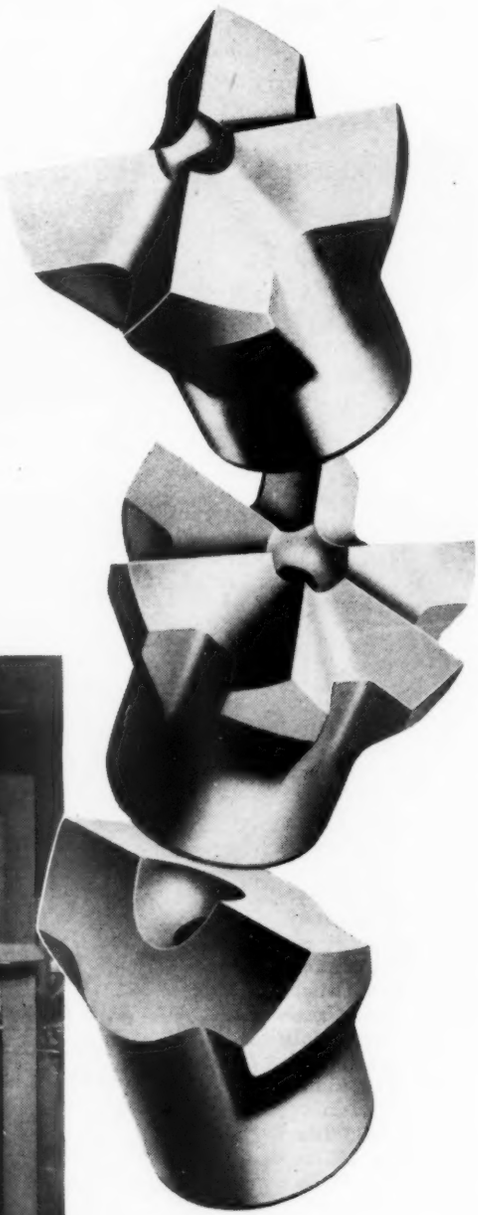

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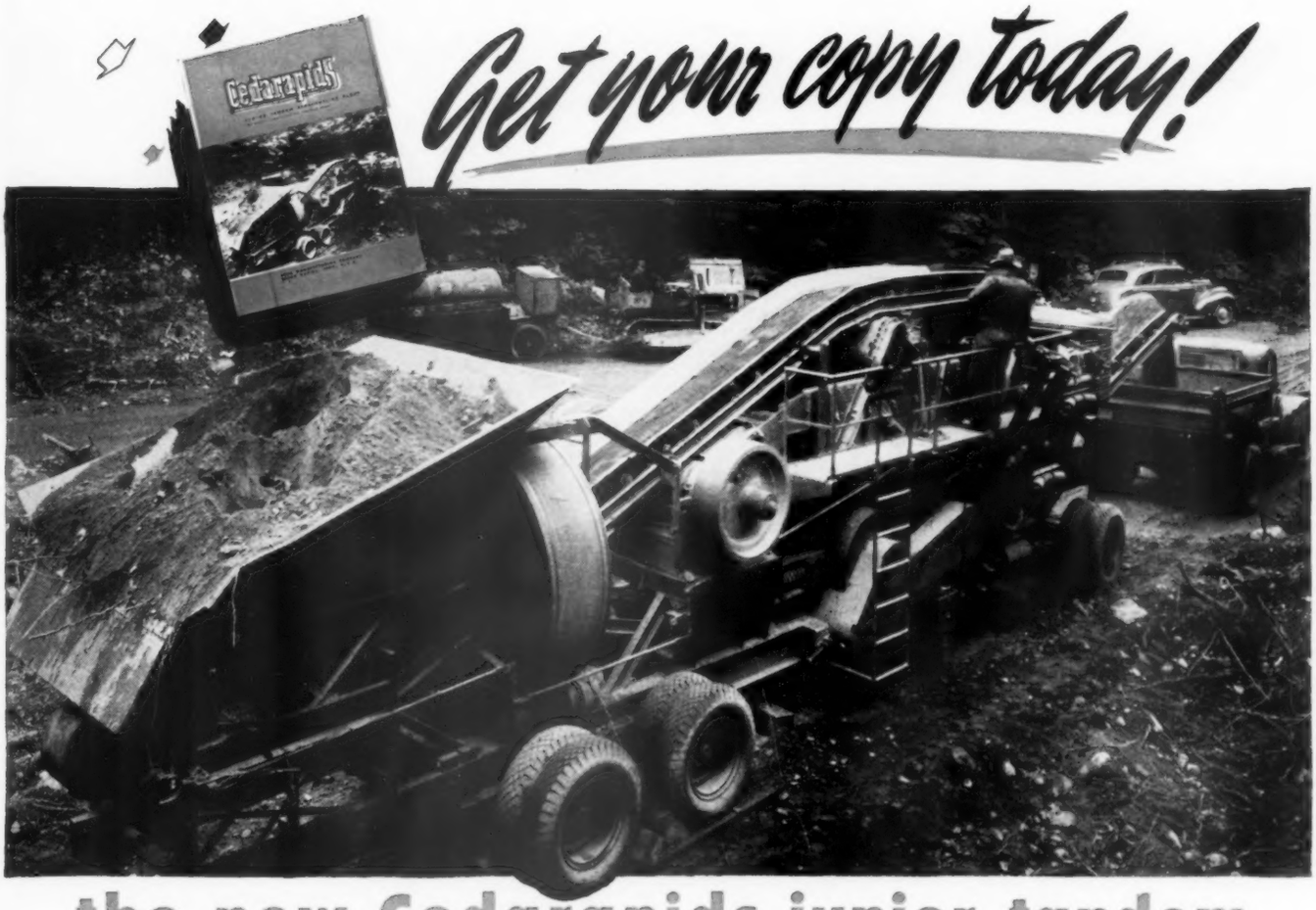
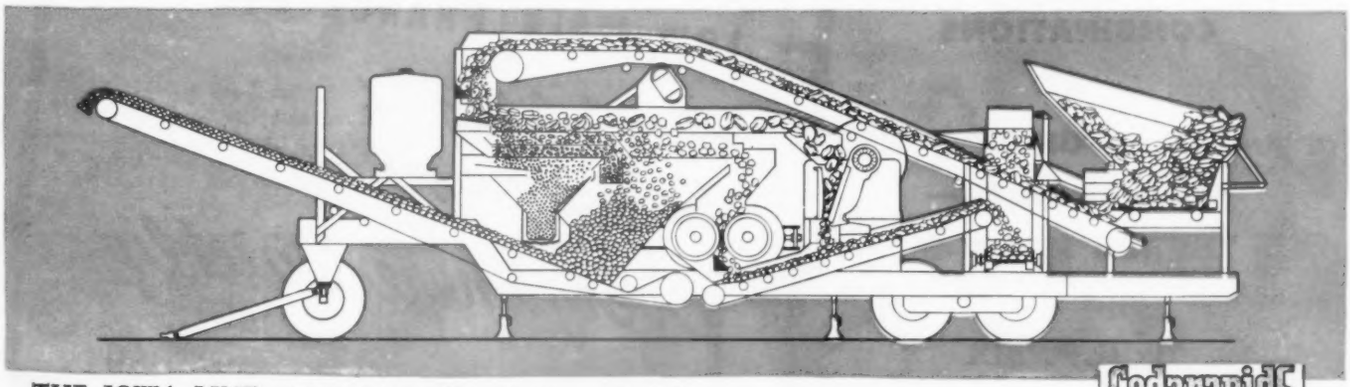



## the new Cedarapids junior tandem

Get a copy of the brand new bulletin describing Iowa's newest portable straightline crushing plant, and you'll see why Junior Tandems are already setting records for high production at very low cost. Look how the material flows in a steady stream from the feeder through the plant taking full advantage of the high capacity of each unit with no waste motion. You never saw so much built-in flexibility arranged so effectively. Chip attachment and sand eliminator can be used as desired. Hopper and feeder are interchangeable with swivel feed conveyor to fit different loading conditions. Horizontal vibrating screen assures greater capacity, closer grading, higher efficiency and requires less head room. Choice of 10″ x 24″ or 10″ x 36″ roller bearing jaw crusher. V-belts and universal drives eliminate chains and sprockets. Fast, easy set-up and takedown minimize lost time between jobs. No belts to put on and take off. No drives to connect. Conveyors swing easily into position. These are only a few of the many advantages that give the Junior Tandem such high capacity and such low operating and maintenance costs.

See your nearest Cedarapids distributor right away for full details.

**Iowa Manufacturing Company, Cedar Rapids, Iowa**



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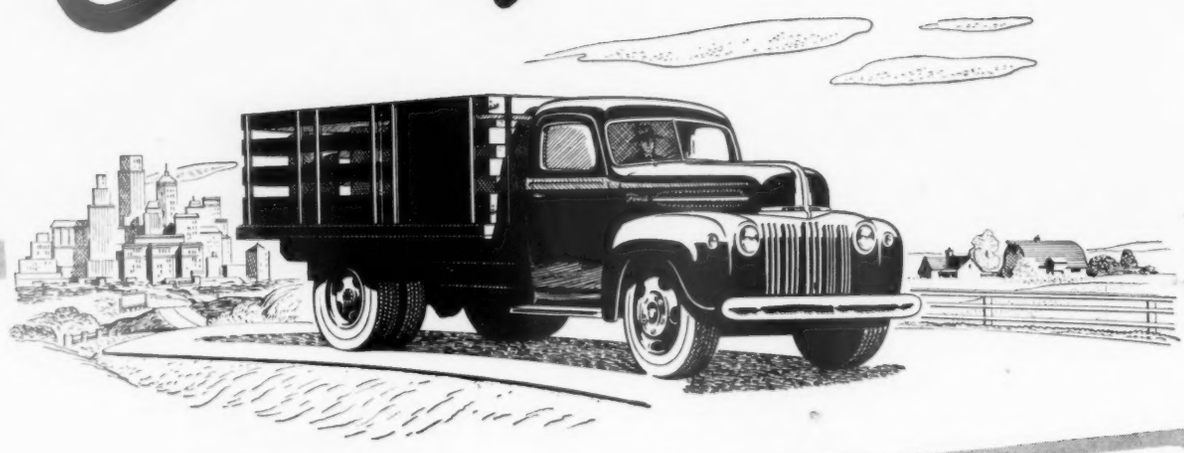

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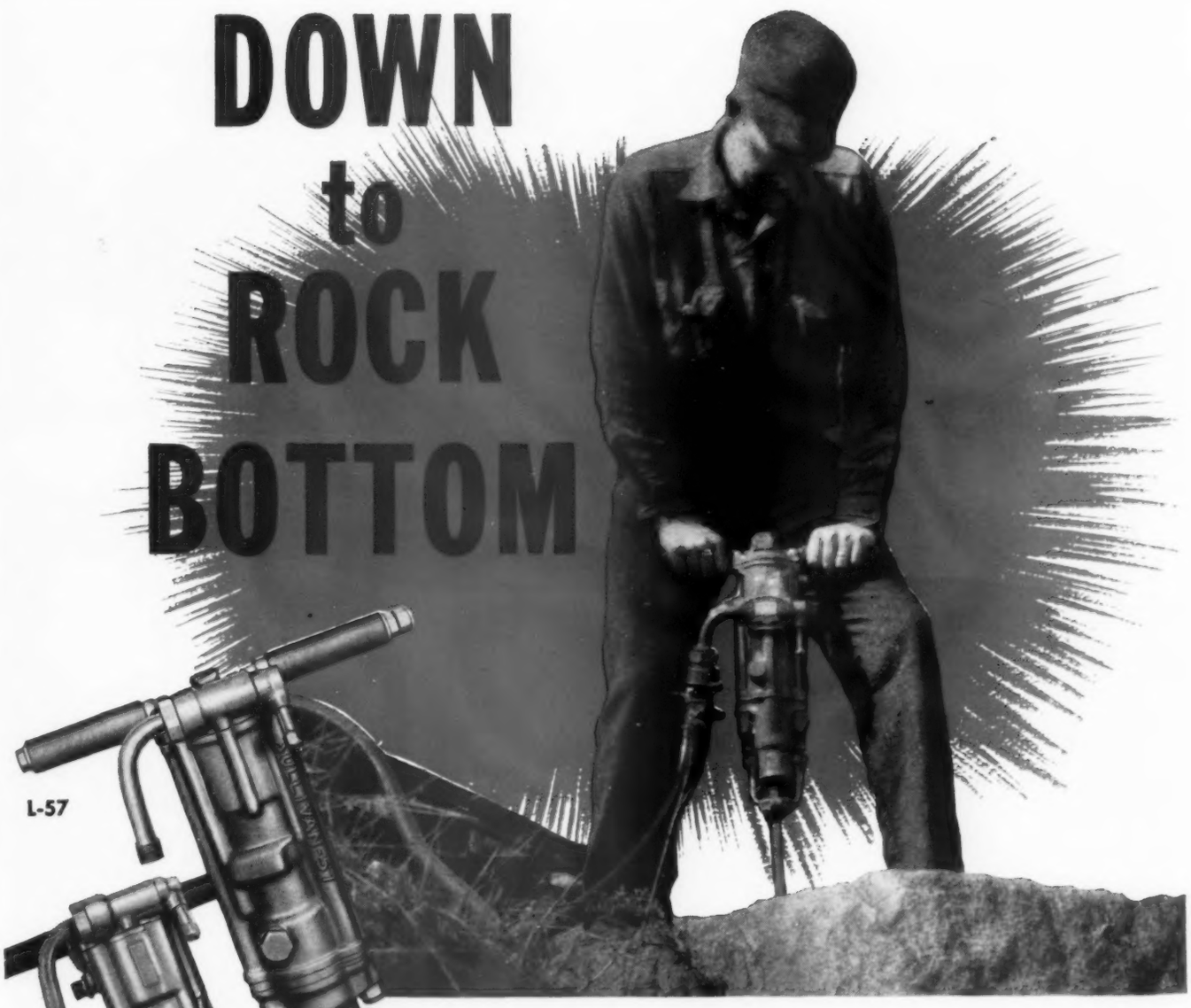
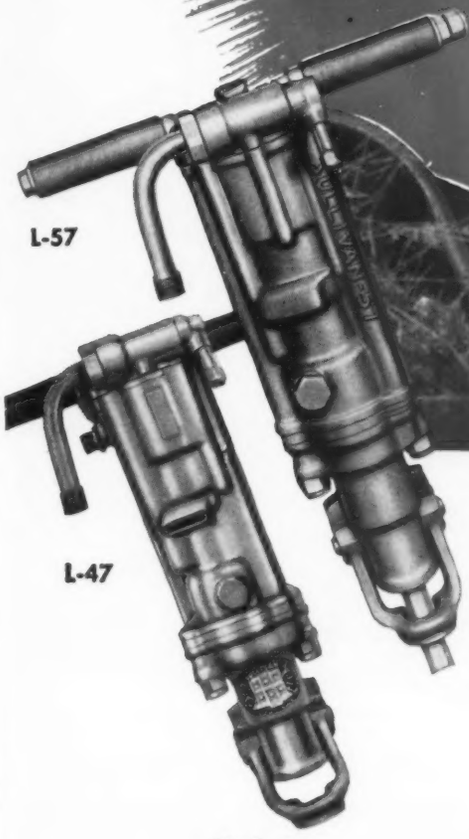
SEE YOUR FRIENDLY FORD DEALER

# DOWN to ROCK BOTTOM






If it's rock-bottom drilling costs you want there's a Sullivan profit-maker for every job. From the small versatile L-1 to the husky, hard-hitting L-57, every Sullivan drill is packed with power but cushioned on air.

Both the 45-pound L-47 and the 55-pound L-57 drills are equipped with the exclusive Sullivan thrifty dual-valve that "makes air do more work." The dual-valve positively controls the volume of air for highest efficiency and gives a *controlled cushion ahead of the stroke.*

Wherever low-cost footage is important — for bench or secondary drilling, block-holing or toe-holing turn to the complete line of Sullivan hand-held drills.

Products
Rotary Blast Hole Drills
Portable and Stationary Air Compressors
Wagon Drills, Core Drills, Rock Drills
A complete line of underground quarry equipment

**Sullivan Machinery Company, Michigan City, Indiana. In Canada: Canadian Sullivan Machinery Company, Ltd., Dundas, Ontario.**

# SULLIVAN

OFFICES { Birmingham • Boston • Butte • Chicago • Claremont • Dallas • Denver • Duluth • El Paso
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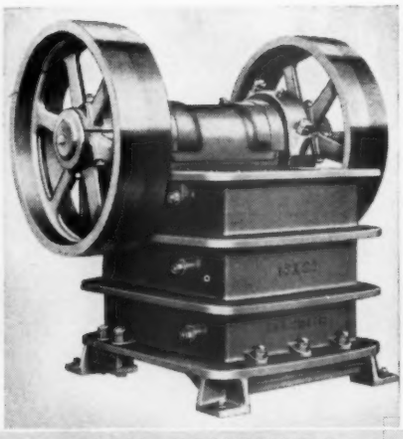
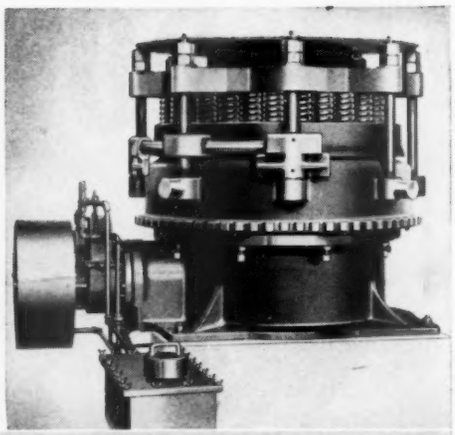
GYRATORY BREAKERS



JAW CRUSHERS

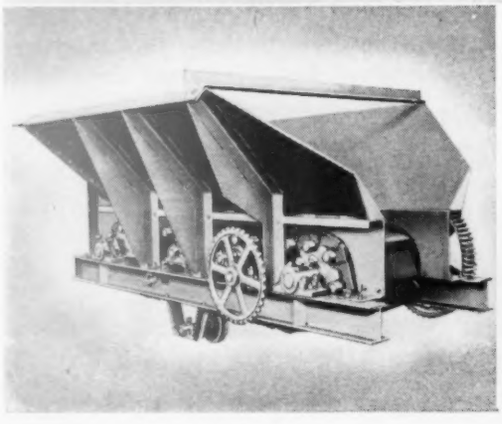


GYRASPHERE CRUSHERS

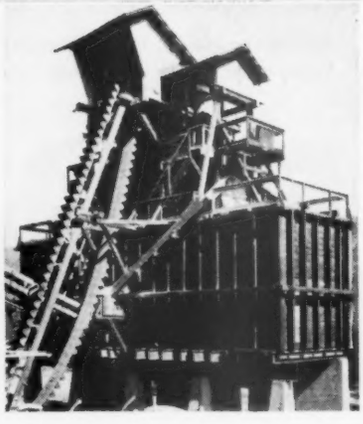
# TELSMITH

## *for* GRAVEL PLANTS, QUARRIES AND MINES...

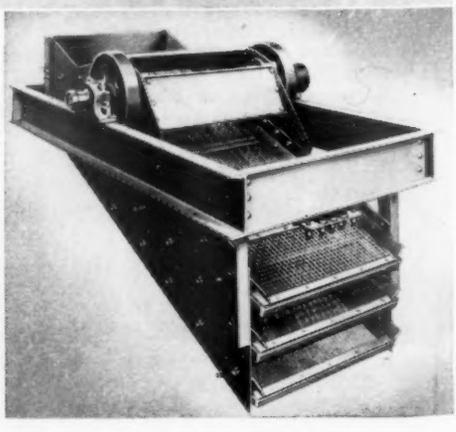
FEEDERS

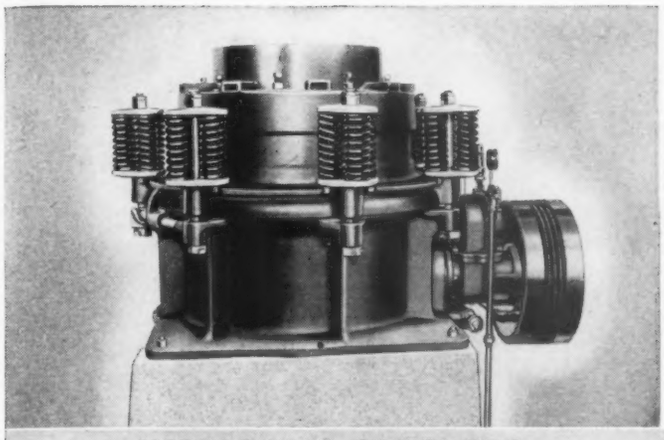


ELEVATORS

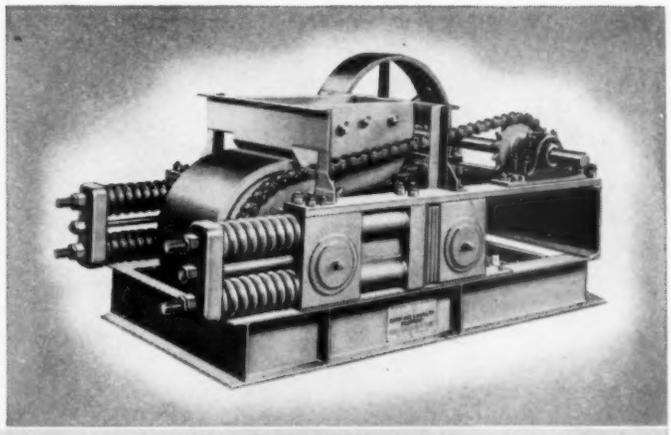


SCREENS





INTERCONE CRUSHERS



ROLL CRUSHERS

# EQUIPMENT

Telsmith engineers design and build *all types* of crushers *and* an equally wide and varied line of equipment for feeding... screening... washing... classifying... sizing ...conveying... loading... in a complete range of models and sizes.

Thus Telsmith engineers can recommend *without bias or prejudice the equipment best suited to your conditions or needs!*

Every piece of Telsmith equipment is designed and built to operate with equally high efficiency... as a single unit, or as a part of the production line in a plant or process.

Ruggedly built... for heavy and continuous duty. Every modern feature of design... for greater capacity... extra flexibility... lowest upkeep. Telsmith equipment will give you finer sizing... improved products... and *cut* your *costs!*

Consult Telsmith engineers; get Bulletin E-15.

ES-1

**SMITH ENGINEERING WORKS, 504 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN**

Cable Addresses: Sengworks, Milwaukee—Concrete, London

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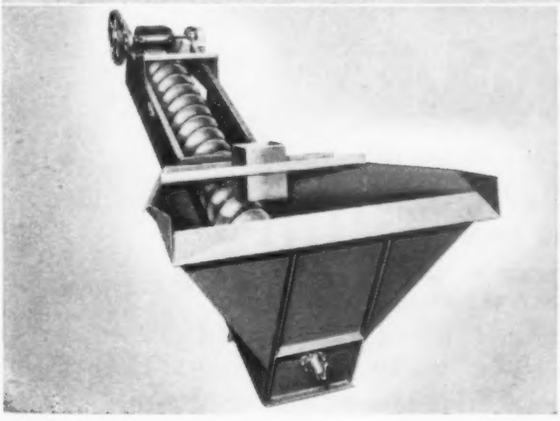
211 W. Wacker Drive Chicago 6, Ill.
713 Commercial Trust Bldg. Philadelphia 2, Pa.
247 Third Street Cambridge 42, Mass.
Boehck Eqpt. Co. Milwaukee 3, Wis.
Mines Eng. & Eqpt. Co. San Francisco 4—Los Angeles 14
Brandeis M & S. Co. Louisville 8, Ky.
Rish Equipment Co. Charleston 22, & Clarksburg, W. Va.
Rish Equipment Co. Roanoke 7, & Richmond 10, Va.
North Carolina Eqpt. Co. Raleigh and Charlotte 1, N.C.
Wilson-Weesner-Wilkinson Co. Knoxville 8, & Nashville 6, Tenn.

CLASSIFIERS



CONVEYORS

# "They are light but— they carry a lot of weight"

ALTHOUGH light in weight, Multiwall Paper Bags have proved their ability — many times over — to protect cement and rock products from dampness and rough handling.

During the war — from 1942 to 1945 — more than 42 million tons of materials were shipped in Multiwalls. These specification-made kraft paper bags protected products from rain, salt spray, and the rigorous conditions of wartime shipping . . . in tropical heat and arctic cold.

### *Looking forward*

Today, we realize that the cement industry is looking forward to meeting the increased demands of America's postwar construction program.

St. Regis is also looking forward to supplying the Multiwall Paper Bags to assure the delivery of this essential commodity.

St. Regis MULTIWALL PAPER BAGS

MULTIPLY PROTECTION • MULTIPLY SALEABILITY

**ST. REGIS PAPER COMPANY**

TAGGART CORPORATION

NEW YORK 17: 230 Park Ave. CHICAGO 1: 230 No. Michigan Ave.
BALTIMORE 2: 2601 O'Sullivan Bldg. SAN FRANCISCO 4: 1 Montgomery St.

IN CANADA:
St. Regis Paper Co. (Can.) Ltd.
Vancouver, British Columbia
Montreal, Quebec

Birmingham Boston Cleveland Dallas Denver Detroit Franklin, Va.
Los Angeles Nazareth, Pa. New Orleans No. Kansas City, Mo. Seattle Toledo

*Above map does not attempt to show all products available in the various states*

For more than 75 years, Union Pacific has served thirteen western states . . . been a partner in their development.

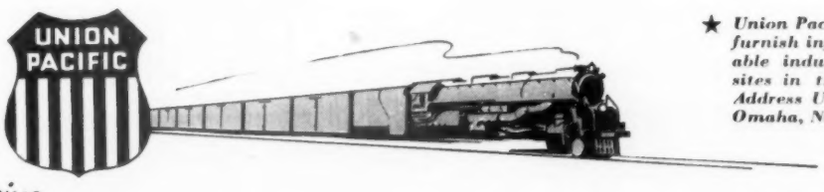
This vast fertile territory is more than the breadbasket of the nation. Due to its great wealth of industrial raw materials—ore, minerals, petroleum and lumber—it might also be called the nation's treasure-chest. Rivers have been harnessed—providing irrigation and power. And there is splendid rail transportation.

**For example, in California, the Pacific Northwest and Missouri there is a large source of supply for the cement industry. Union Pacific has the equipment and personnel to meet all the requirements of shippers in those regions.**

These thirteen western states served by the railroad are ripe for postwar expansion. They have the materials, facilities and space.

Union Pacific will continue to play its part in the future progress of this western territory by providing unexcelled freight and passenger transportation over its Strategic Middle Route.

*Be Specific— say "Union Pacific"*




★ *Union Pacific will, upon request, furnish information about available industrial and mercantile sites in the territory it serves. Address Union Pacific Railroad, Omaha, Nebraska.*

*The Progressive*

**UNION PACIFIC RAILROAD**

*The Strategic Middle Route*

• With the Badger, only the bucket, boom, turntable and mast swing. The heavy main deck, engine, transmission and main frame are STATIONARY—to counterbalance heavier loads and avoid objectionable tail-swing.

The Badger makes more swings per minute, day, month and year . . . wastes no fuel or power swinging extra weight . . . digs the hardest "diggable" material . . . can work in closer quarters.

Profits are made by working fast and saving time. Clipping a few seconds off each dig-swing-dump cycle means more yardage at the close of the day.

The Badger is readily convertible to crane, dragline, trench-hoe, pile driver and skimmer . . . travels on special wheel mounts from job to job at motor truck speeds.

Released from its duties with the Armed Forces, the Badger is once again available for prompt delivery. Your nearby A-W Distributor will be glad to tell you the whole story.

**AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.**

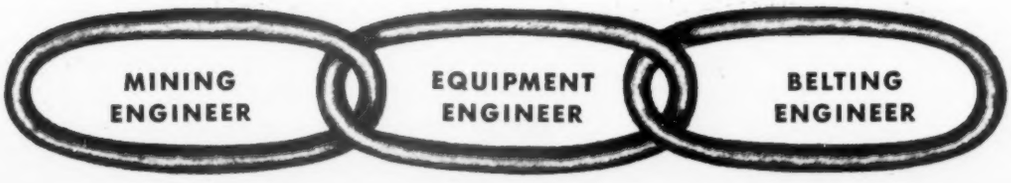
BUILDERS OF ROAD MACHINERY SINCE 1859

Austin A Western

BUY MORE WAR BONDS

**It takes the technical knowledge of all three...the Mining Engineer...the Equipment Engineer and the Belting Engineer...to produce the sure formula for**

## LOW COST CONVEYOR HAULAGE




SERVING THROUGH SCIENCE

**UNITED STATES RUBBER COMPANY**

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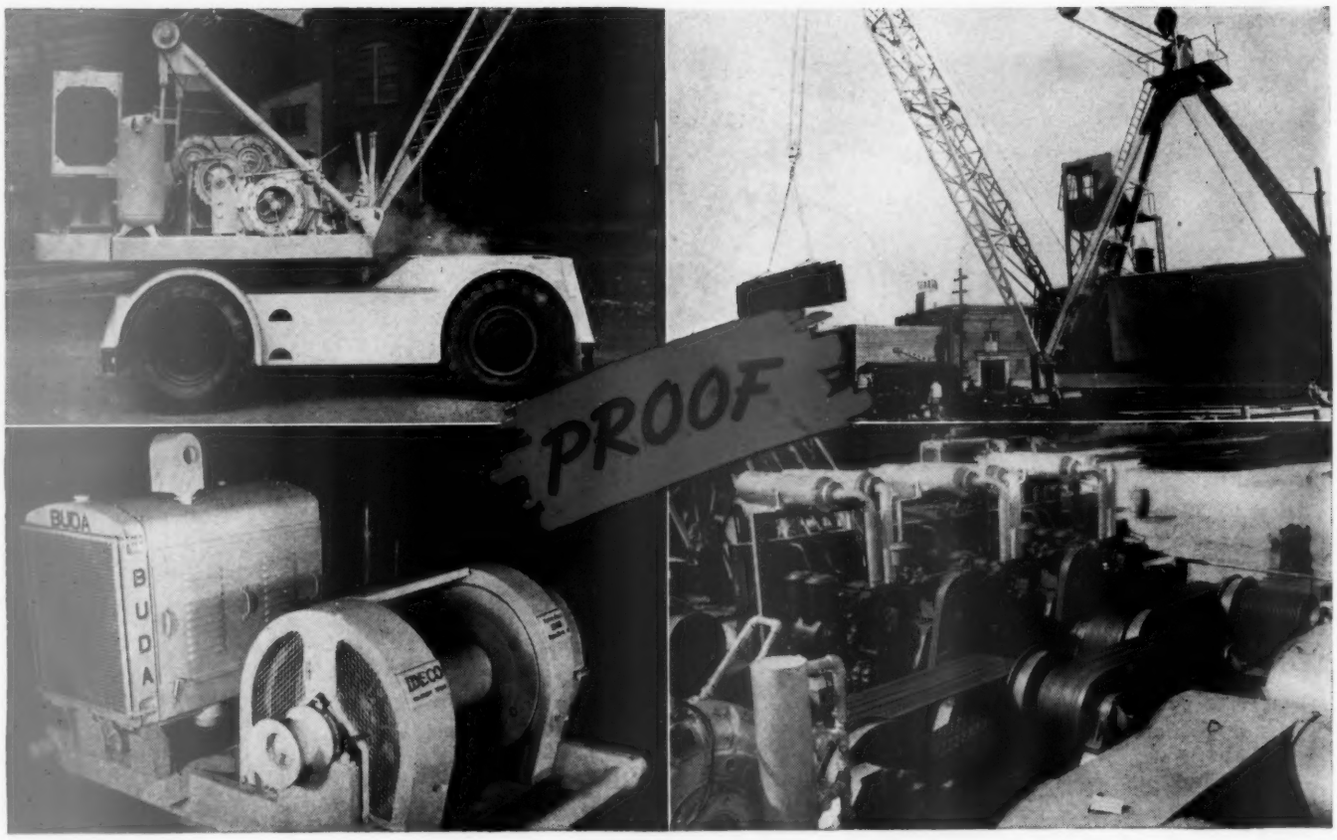
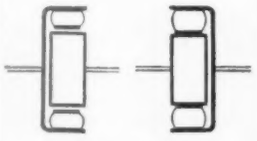



# How to write CLUTCH SPECIFICATIONS for Heavy-Duty Drives . . .

★



**How the FAWICK AIRFLEX CLUTCH Works**

Compressed air expands the rubber-and-fabric gland—to engage the clutch with any degree of "grip" you want. Release the air and clutch disengages.

- ☑ Do you want air-cushioned torque control—direct or remote?
- ☑ Do you want shock and vibration absorbed by a cushion of air?
- ☑ Do you want *uniform* clutch engagement, at all speeds, under all loads?
- ☑ Do you want complete freedom from troublesome moving parts—such as springs, arms, levers and toggles?
- ☑ Do you want complete freedom from lubrication and adjustment?
- ☑ Do you want lower operation and maintenance costs?

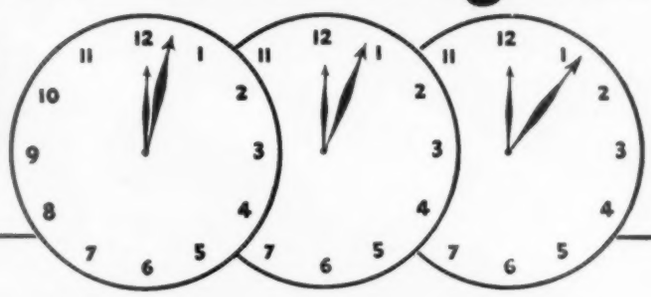
If you check these points YES, let our Engineering Department give you recommendations. Book on request.

## FAWICK *Airflex* CLUTCH

FAWICK AIRFLEX CO., INC. • 9919 Clinton Road, Cleveland 11, Ohio

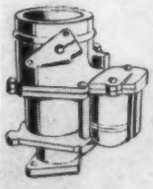
In Canada, Reynold-Coventry Ltd., Montreal, Toronto, Vancouver — In Britain, Crofts Engineers, Ltd., Bradford, England

# How to Cut Metal Cleaning Time to MINUTES



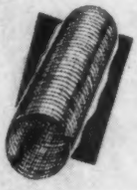
## NEW, FAST-ACTION DETERGENT CLEANS FERROUS AND NON-FERROUS METALS...Easy to Handle

### TYPICAL USES FOR Solvent "26"



**CARBURETORS**—Solvent "26" removes gum, gasolene sediment and other accumulations of dirt.

**SPARK PLUGS**—Solvent "26" safely cleans porcelain; helps loosen carbon deposits.



**METAL PLATES AND SCREENS**—Solvent "26" restores clear, clean finish to any metal surface.

**DIES AND STAMPING**—Solvent "26" removes drawing compounds from die-formed or stamped metal.

**LABORATORY EQUIPMENT**—Solvent "26" frees glass and metal tubing and their supports of gums, varnishes and other incrustations or deposits.

**PISTONS**—Removes lacquers, gums, resins, etc. from gas, gasolene and diesel engine pistons and rings. Also effective for cleaning all parts of dismantled motors, engines and machinery.

**REMOVES:**

**Oil • Grease • Gums • Varnishes • Lacquers • Paints**
**Carbonaceous Deposits • Asphaltic Products**

**FROM:**

**Steel • Cast Iron • Aluminum • Porcelain • China**
**Chrome and Nickel Plate • Stone • Precious Metals**
**Brass • Washable Fabrics**

Used throughout the war in critical industry as a superior cleaning agent, newly-developed SOLVENT "26" is now available for all industrial needs.

Offering many advantages in time, labor and cost over other present cleaning methods . . . Solvent "26" is so effective a detergent it can be used at *ordinary* room temperatures.

The fast action of Solvent "26" reduces cleaning time from hours to minutes on dismantled engine parts and all kinds of machinery. Simply dip, rub, brush or spray it on. Then flush clean with hot water.

Mail the coupon today for literature and information leading to a demonstration of this unique product in your own plant.

**CITIES SERVICE OIL COMPANY**
**ARKANSAS FUEL OIL COMPANY**

CITIES SERVICE OILS
ONCE-ALWAYS

Cities Service Oil Company
Room 641
70 Pine Street
New York 5, N. Y.

Gentlemen: I am interested in a demonstration of Solvent "26"—at no cost or obligation.

Name.....

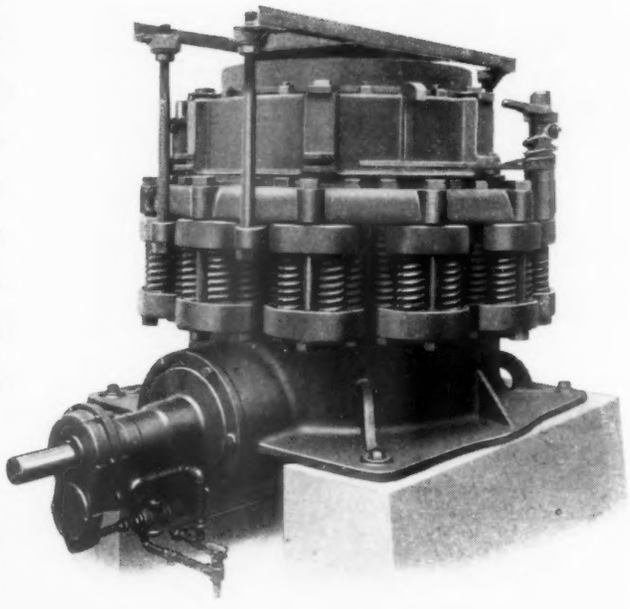
Title.....

Company.....

Address.....

City.....State.....

The building of new, modern highways and the rebuilding of those that are old and worn out will have a prominent place in postwar construction. This will require a tremendous quantity of crushed materials, particularly the finer sizes as are used for highways of the bituminous type. The Symons Cone is ideally suited for producing such materials. For quantity, low cost production, follow the example set by the leaders of the crushed materials industry — use Symons Cones.



**NORDBERG MFG. CO.**
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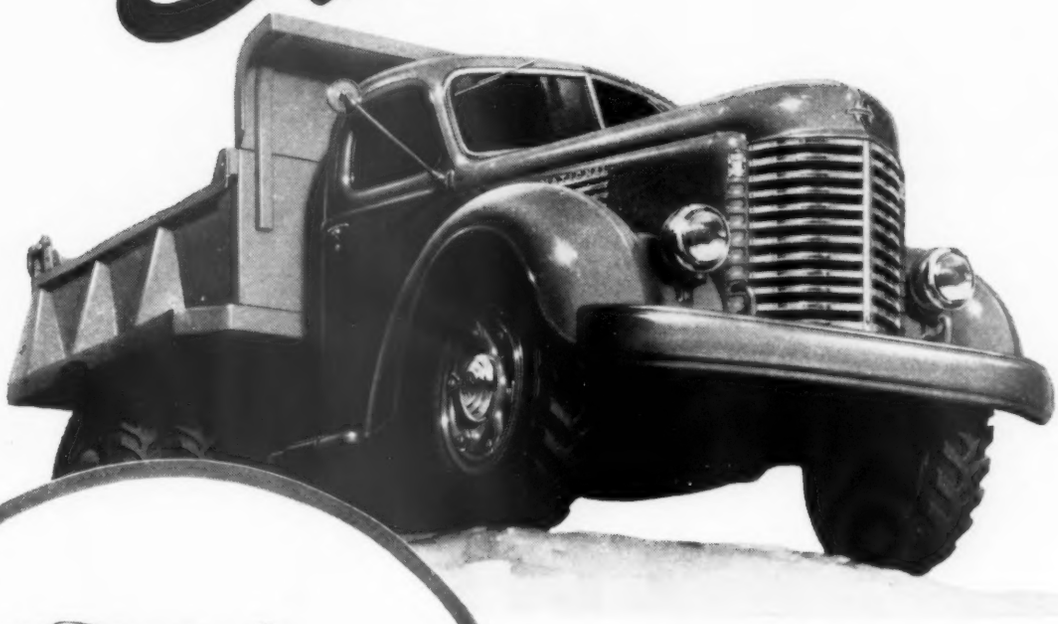
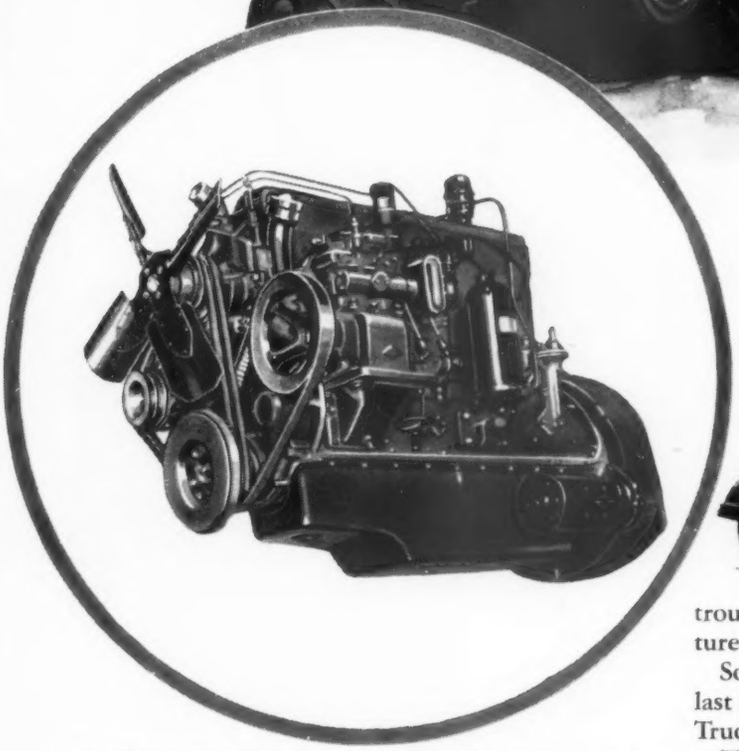
NORDBERG MACHINERY

# SYMONS CONE CRUSHERS

# TRUCK *Stamina*





## FOR TOUGH TRANSPORT

• More stamina and power. That's what today's International Trucks deliver.

Note the International Red Diamond Engine in the picture. This famous engine powers the bigger Internationals. Now has longer life, because of greater strength, as well as added power.

Improvements have been made in International Truck Chassis, too—improvements to step up even further the economy, ease of operation and long, trouble-free service that are the outstanding features of International Truck performance.

So outstanding is this performance that in the last fourteen years more heavy-duty International Trucks have been sold than any other make.

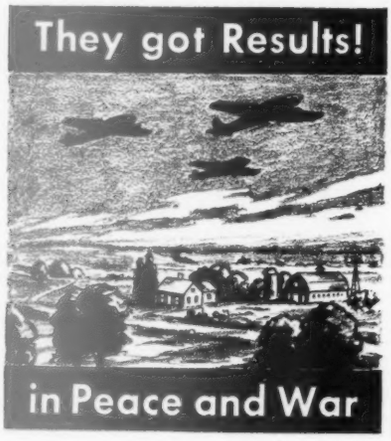
The International Truck Line is a complete line, with a truck of the right size and carrying capacity for every job. And back of every truck are these top service facilities—a network of International Truck Dealers and a system of International Truck Branches that form the nation's largest company-owned truck service organization.

**INTERNATIONAL HARVESTER COMPANY**
180 North Michigan Avenue Chicago 1, Illinois

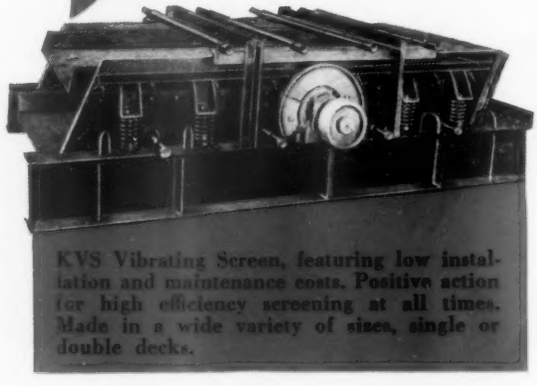
*LISTEN TO "HARVEST OF STARS" EVERY SUNDAY! NBC NETWORK*

INTERNATIONAL

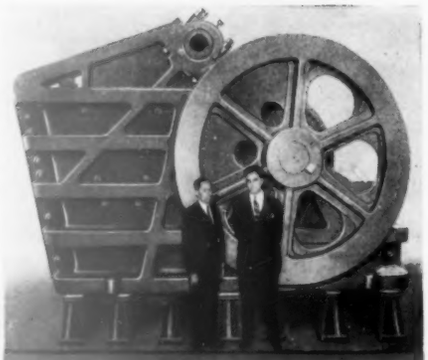
**INTERNATIONAL *Trucks***




# PIT and QUARRY OPERATORS prefer KVS MACHINES because ...they get



KVS Vibrating Screen, featuring low installation and maintenance costs. Positive action for high efficiency screening at all times. Made in a wide variety of sizes, single or double decks.



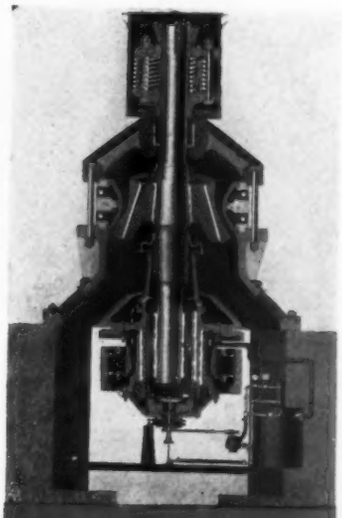
KVS Swing Jaw Crusher for handling large tonnages of any kind of rock. Extra heavy duty type. Fly wheels heavy and unbalanced to give kinetic energy and help lift pitman on upward stroke. In sizes to suit all output or feed requirements.

Machines that can be relied upon to "get the work out" under all operating conditions are indispensable to speed up post-war activities.

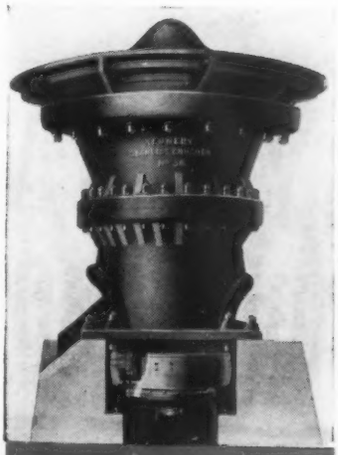
KVS Engineering and construction methods, coordinated by years of experience in the nonmetallic mineral field, provide a full line of efficient reduction machinery covering all phases of material processing. KVS time-proved equipment is today the "backbone" of production records for sustained output and operating economy.

**KENNEDY-VAN SAUN MFG. & ENG. CORPORATION**

# *Results!*
## in Production and Profits



KVS Ball Bearing Gearless Crusher for fine reduction. Low head type. Synchronous motor built in the pulley applies all power directly to crushing. Reversible concaves or grinding ring. Gives 100% more wear than any other crusher.



KVS Gyratory Gearless Short Shaft Standard Crusher for primary reduction. Force-feed lubrication. Easy accessibility. Synchronous motor built in the pulley. Shows large power saving over any geared type crusher.

Representatives in all principal cities in the United States and foreign countries including Ejido 7-503, Mexico, D.F.

*Write for Bulletins*

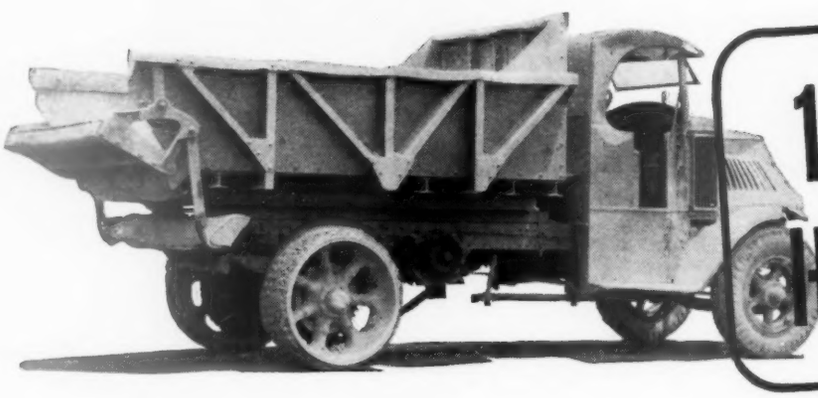
ARMY E NAVY

**KVS PRODUCTS**

| | |
|---|---|
| HAMMERMILLS | KILNS |
| ELEVATORS | CONVEYORS |
| AIR SEPARATORS | SCREENS |
| GRINDING MILLS | FEEDERS |
| COOLERS | CRUSHERS |
| DUST COLLECTORS | DRYERS |
| CLASSIFIERS | WASHERS |

Complete Cement, Rock Crushing, Sand and Gravel, Lime and Dolomite Plants

**2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.**



# 16 YEARS AT HARD LABOR!

Down in the rock quarries of the Edward Balt Company of Hartford, Connecticut, you can see three Mack trucks bearing up under a daily beating with typical Mack sturdiness.

Loaded by steamshovel, these trucks haul capacity loads from quarry to crusher, a distance of 1,500 feet, on an average of 25 times a day.

Two of the three are LMSW-Ms models of recent delivery. The third, an old 7½-ton Mack, has been on the job since 1929. Sixteen years at hard labor on the rockpile and still going strong!

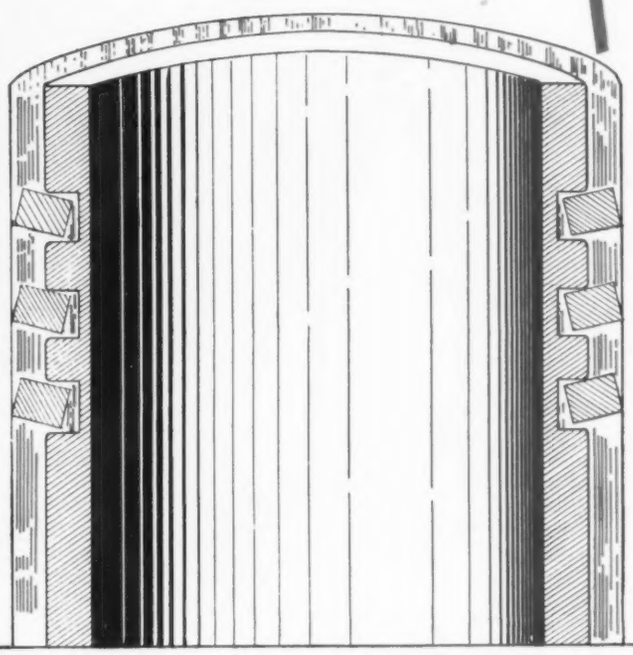
The records of American business for the last 45 years are full of similar instances demonstrating that, for endurance, for performance, for all-around efficiency, you can't beat a Mack.

**Mack**
**TRUCKS**
**FOR EVERY PURPOSE**

**Performance Counts**

*Mack Trucks, Inc., Empire State Building, New York 1, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.*

# Diesel Engine DANGER points



## "ROCKING" PISTON RINGS SCORE LINERS

"Rocking" piston rings, the result of excessive wear in the ring grooves of Diesel engine pistons, are the source of considerable lay-off time and expense to Diesel operators—Wear-enlarged grooves permit rings to rock, and "bite" into cylinder walls. The result is usually a costly overhaul to replace not only pistons, but worn liners as well. It's a danger point in many Diesels—but "rocking" rings and their cause, enlarged ring grooves, can be minimized.

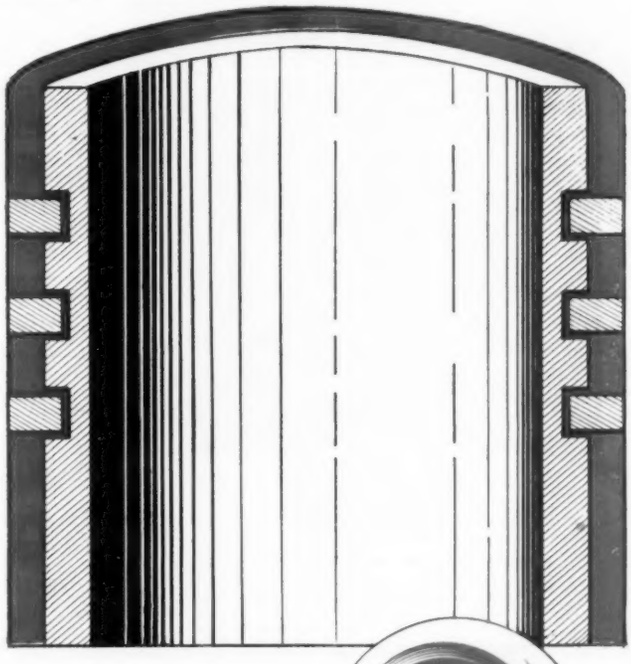
RPM DELO Oil clings to hot engine areas often left exposed to wear by ordinary uncompounded oils.

## RING GROOVE WEAR REDUCED BY RPM DELO OIL

In a series of 1000-hour laboratory tests, Standard scientists proved that ring groove wear can be minimized with RPM DELO Diesel Engine Lubricating Oil.

Piston ring groove wear in an engine operated on a top quality straight mineral oil was thirty times that experienced with RPM DELO Oil in an identical test.

RPM DELO Oil reduces wear due to a metal-adhesion additive which makes it cling to and lubricate hot engine areas other oils often leave bare, and to other compounds which eliminate stuck rings and engine deposits, prevent bearing corrosion, stop oil foaming.



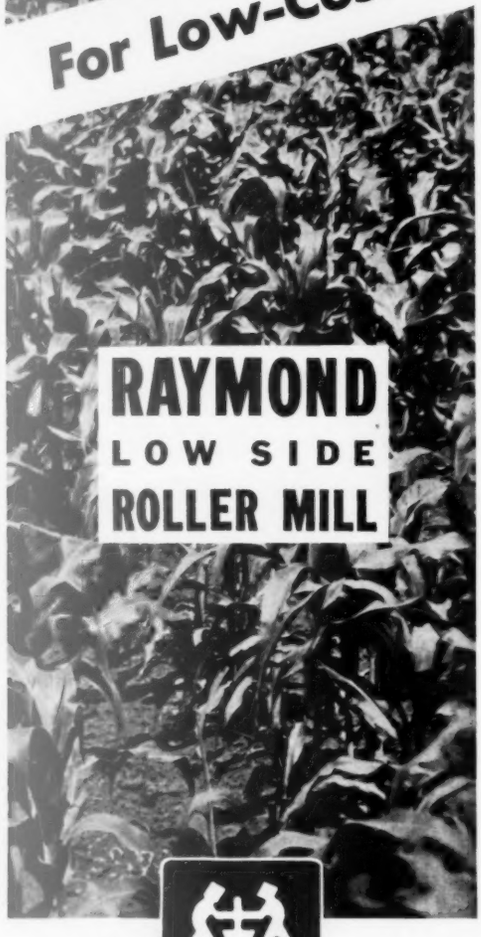
To match the fine performance of RPM DELO Oil use these equally efficient companion products from the same famous "RPM" line—

**RPM HEAVY DUTY MOTOR OIL**
**RPM COMPOUNDED MOTOR OIL**
**RPM GEAR OILS & LUBRICANTS**
**RPM GREASES**

For additional technical information write Dept. T-X, Standard of California, San Francisco 20, California, or California Commercial Company, 30 Rockefeller Plaza, New York 20, N. Y.

**STANDARD OF CALIFORNIA**

# For Low-Cost Mineral Fertilizer Grinding



Acceleration of farm crop programs everywhere calls renewed attention to the Raymond Low Side ROLLER MILL . . . long the standard machine in the mineral fertilizer industry.

For medium fine grinding in producing 100-mesh materials . . . as in reducing phosphate rock for acidulation purposes, or pulverizing limestone for soil liming . . . the Low Side Roller Mill gives high capacities at extremely low cost per ton of product.

Where the raw material carries moisture as in grinding gypsum and limestone, the mill may be equipped with a drying system to remove the surface moisture while pulverizing.

Ask for Low Side Roller Mill Catalog No. 34. If high-fineness grinding is required, see Catalog No. 51 of High Side Roller Mills.

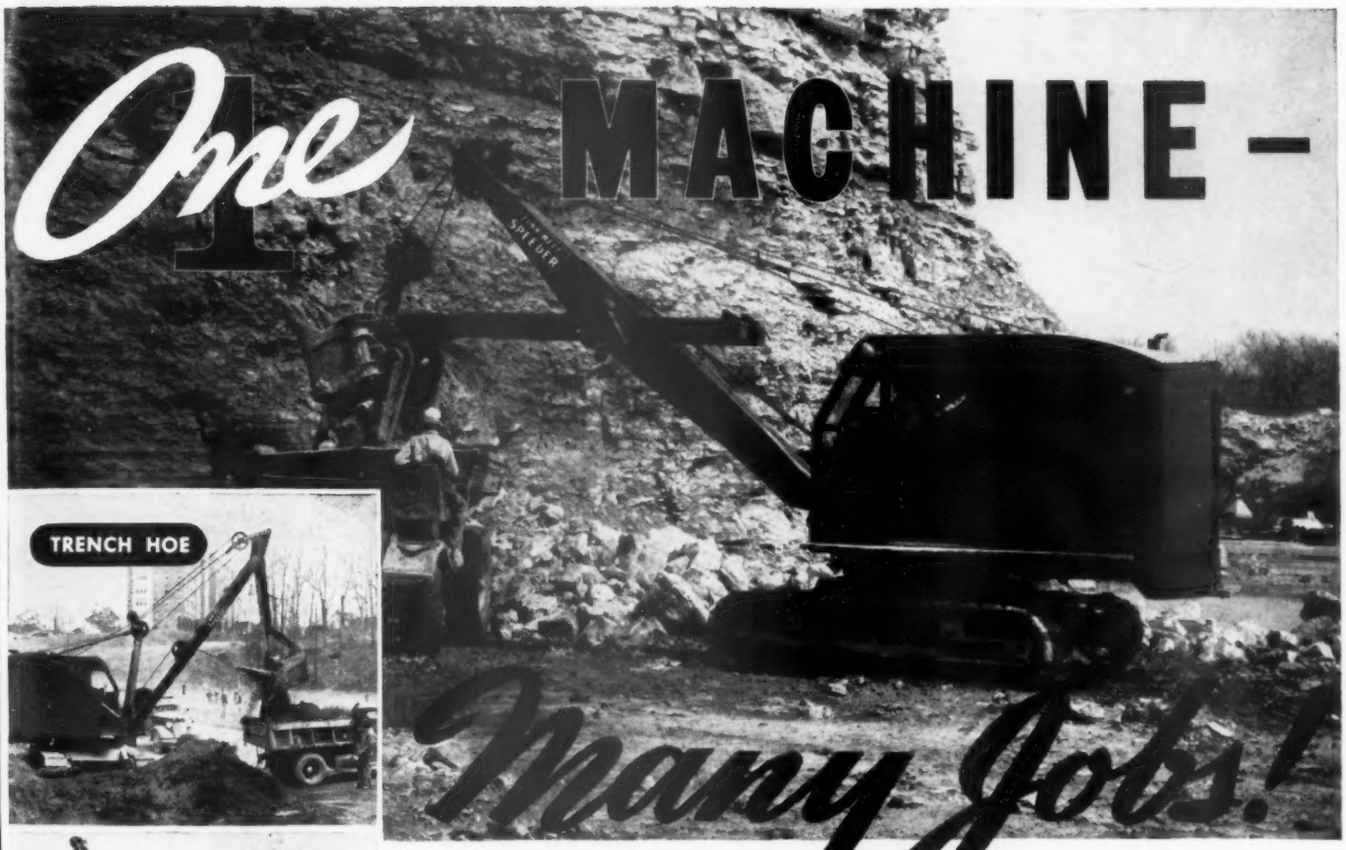
## RAYMOND PULVERIZER DIVISION

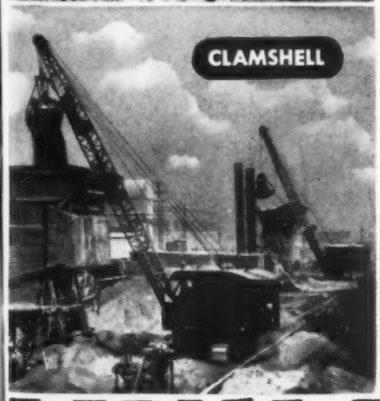
COMBUSTION ENGINEERING COMPANY, INC.

1321 NORTH BRANCH ST. CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES — CANADA: COMBUSTION ENGINEERING CORP., LTD., MONTREAL

# One MACHINE — Many Jobs!






## YOUR LINK-BELT SPEEDER "SHOVEL-CRANE" IS THE BUSIEST, MOST USEFUL MACHINE ON THE JOB!

Look at the variety of operations you can do with one Link-Belt Speeder! Clearing the site, excavating, handling materials, placing concrete, erecting steel, driving piles, digging trenches for underground piping, leveling and grading . . . you do all these jobs with the same Link-Belt Speeder unit, by merely shifting from one front-end attachment to another. No wonder the owner of a Link-Belt Speeder values it as a money-maker! Versatile, easy to operate, powerful and rugged, the Link-Belt Speeder has a big place cut out for it—in construction programs now getting under way.

Illustrations are all of the L.S. Eighty-Five, the super ¾ yard machine. Other models up to 3 yards capacity.

For Prompt, Efficient, Convenient Sales and Service, There is a Link-Belt Speeder Distributor Located Near You.

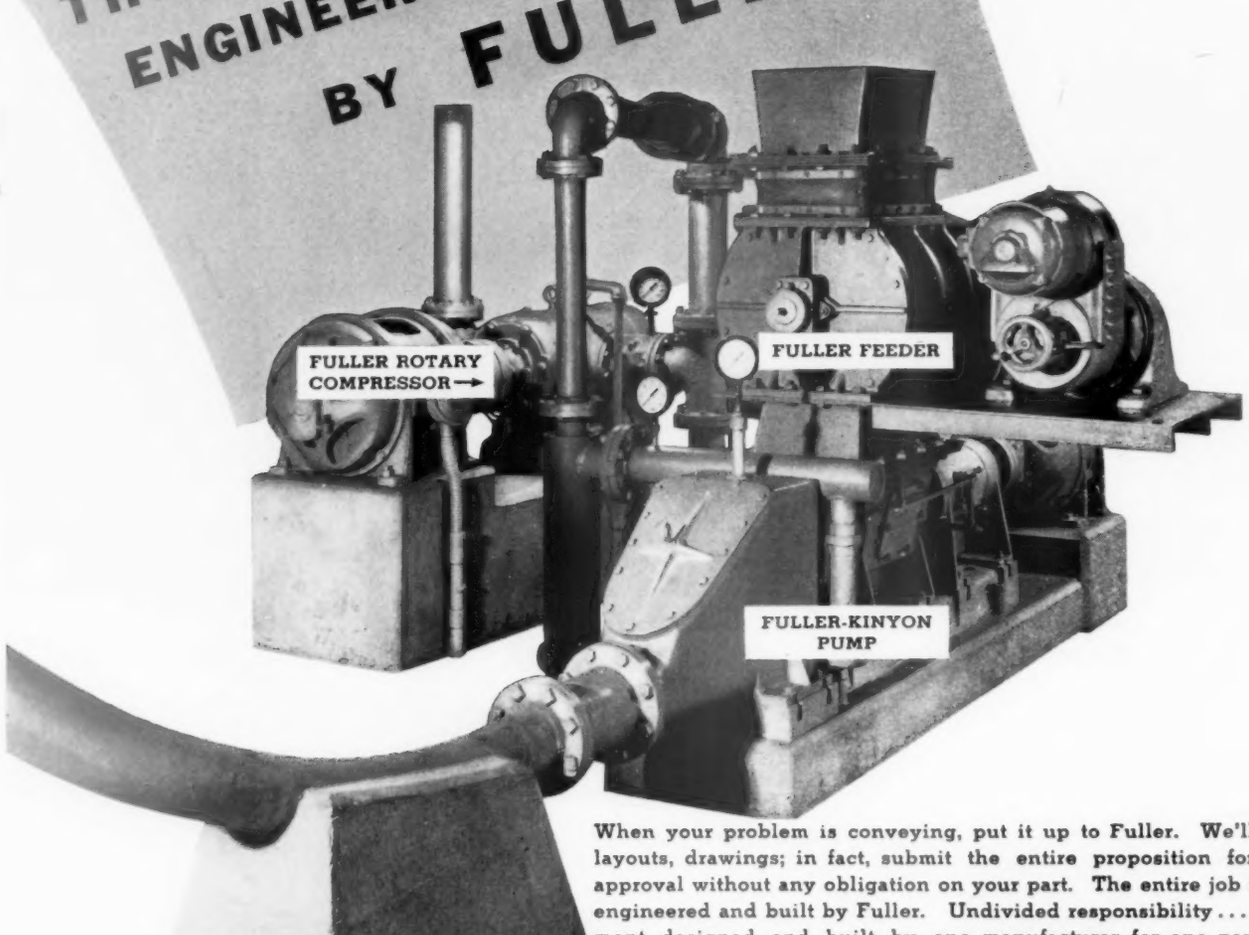
10,128

# LINK-BELT SPEEDER

*Builders of the Most Complete Line of*
**SHOVELS-CRANES-DRAGLINES**

LINK-BELT SPEEDER CORPORATION, 301 W. PERSHING ROAD, CHICAGO-9, ILL.
( A DIVISION OF LINK-BELT COMPANY )

# THE COMPLETE JOB... ENGINEERED AND BUILT BY FULLER




**When your problem is conveying, put it up to Fuller. We'll make layouts, drawings; in fact, submit the entire proposition for your approval without any obligation on your part. The entire job can be engineered and built by Fuller. Undivided responsibility . . . equipment designed and built by one manufacturer for one particular purpose . . . no division of responsibility for the satisfactory performance of the installation as a whole.**

**The Fuller-Kinyon System illustrated above, conveying pulverized phosphate rock, is a good example. Fuller-Kinyon Pump for conveying material from a pulverizer to storage, Fuller Feeder for control of feed to the pump, and a Fuller-Rotary Single-stage Compressor, direct connected to the pump, which furnishes air for conveying . . . air where and when needed and at pressures to do the work most economically and efficiently.**

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P76



PRINT IN BINDING

KENTUCKY-TENNESSEE CLAY COMPANY

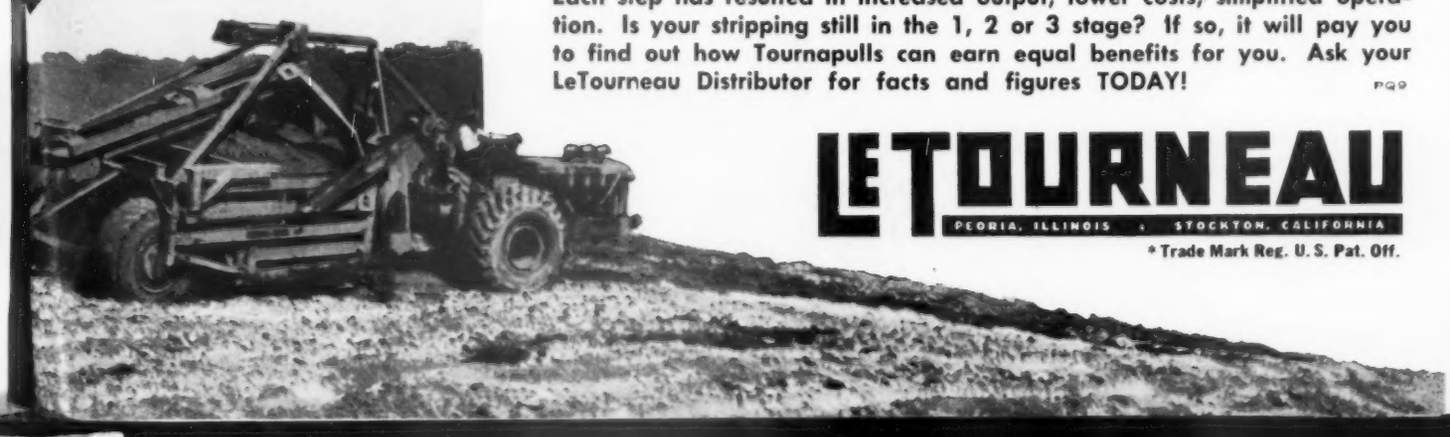
# STRIPPING EVOLUTION LEADS TO

# *TOURNAPULLS

Overburden is 51' deep . . . mixed clay, sand, gravel, with 2 feet of saturated material over 5' of lignite and 3½' of sandy clay just above the 6 layers of high-grade industrial clay. Tournapulls load down grades as steep as 25%.

Hauls run to 2000', adverse grades to 7%. On 1875' one-way haul Tournapulls average 10 round trips per hour. Roads were built and are maintained by the Scraper units.

Much of material is sticky, some of it extremely wet. LeTourneau positive ejection tailgate keeps bowls clean.



## Stripping Contractor, H. W. Caldwell & Son Modernizes Operations with 3 Tournapulls

Increased demand during the past 40 years for high quality clay, produced by the Kentucky-Tennessee Clay Co., has resulted in a natural evolution of stripping methods and equipment at their Mayfield, Kentucky mine. For instance . . .

1. Originally, stripping was done by shovels loading into small narrow-gauge cars pulled by dinkies.
2. Next came shovels loading to trucks.
3. Then, crawler tractors with LeTourneau Carryall Scrapers combined load, haul and spread functions to produce at a still lower cost per yard and so took over the stripping.
4. Today, Contractor H. W. Caldwell & Son, handles the bulk of the stripping with 3 rubber-tired Tournapulls. These rigs extend the profitable haul range, move overburden at scraper costs beyond future areas of operation. This eliminates necessity for rehandling. Tournapull's big capacity and high speed saves time, increases output per unit and man hour.

**Each step has resulted in increased output, lower costs, simplified operation. Is your stripping still in the 1, 2 or 3 stage? If so, it will pay you to find out how Tournapulls can earn equal benefits for you. Ask your LeTourneau Distributor for facts and figures TODAY!** PQ9

**LETOURNEAU**

PEORIA, ILLINOIS · STOCKTON, CALIFORNIA

* Trade Mark Reg. U. S. Pat. Off.

BINDING

. . . not with the Gardner-Denver Backfill Tamper! This tamper mechanically compacts the backfill to meet the most exacting requirements—*and does it fast.*

Easily walked over the fill and balanced for smooth handling, the Backfill Tamper cuts down operator fatigue. Power consumption is remarkably low. And neither the valve nor the exhaust has a tendency to freeze in cold, damp weather.

Speed up operations with the rugged Gardner-Denver Backfill Tamper. For complete information, write Gardner-Denver Company, Quincy, Illinois.

**INTEGRAL OIL RESERVOIR** *assures complete lubrication.*

**CYLINDER BORE SPECIALLY BURNISHED**—*highly wear-resistant.*

**LOW LIFT END SEATING VALVE** *provides efficient piston action over a long period of time.*

**TAMPING PAD FIRMLY SECURED** *on piston rod by tapered shank and tapered lock nut.*

**DESIGNED FOR SIMPLE MAINTENANCE.**

**GARDNER-DENVER**
*Since 1859*

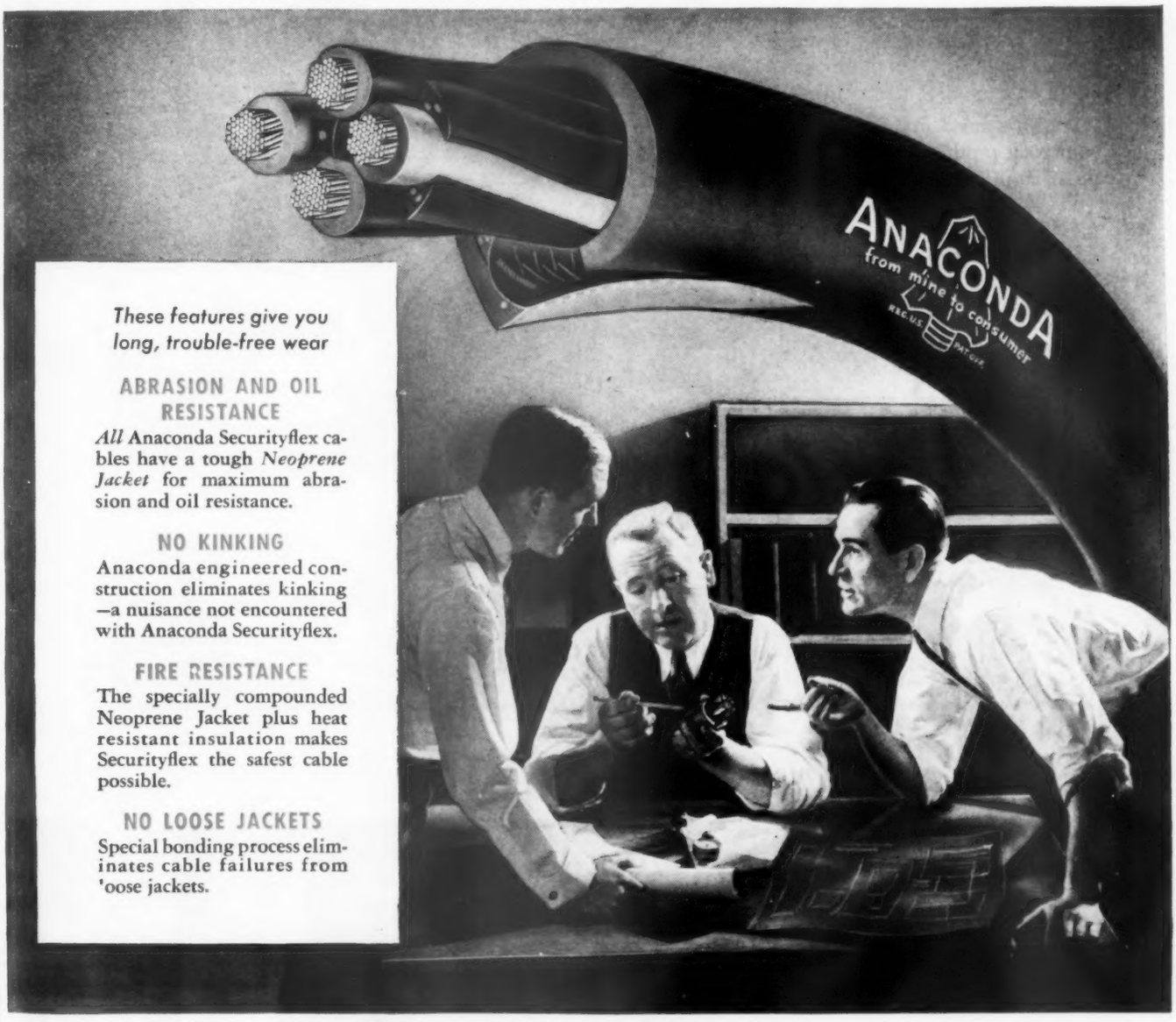
# Here is Sound Engineering Service for Your

The same engineering knowledge which helped build this Heavy-Duty Securityflex cable is available for consultation on your cable problems. Anaconda engineers think in terms of reliability plus safety. Call or write nearest district office. Anaconda Wire & Cable Company, Subsidiary of Anaconda Copper Mining Company, 25 Broadway, New York 4, N. Y., Sales Offices in Principal Cities.

46297

# CABLE PROBLEMS

## CUTS COSTS — PROMOTES SAFETY




*These features give you long, trouble-free wear*

**ABRASION AND OIL RESISTANCE**

*All* Anaconda Securityflex cables have a tough *Neoprene Jacket* for maximum abrasion and oil resistance.

**NO KINKING**

Anaconda engineered construction eliminates kinking —a nuisance not encountered with Anaconda Securityflex.

**FIRE RESISTANCE**

The specially compounded Neoprene Jacket plus heat resistant insulation makes Securityflex the safest cable possible.

**NO LOOSE JACKETS**

Special bonding process eliminates cable failures from 'oose jackets.

**ANACONDA** *Securityflex* **CABLE**

ANACONDA
from mine to consumer

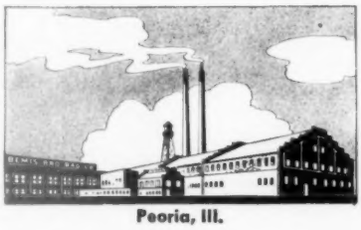
# Maybe we've been too Modest

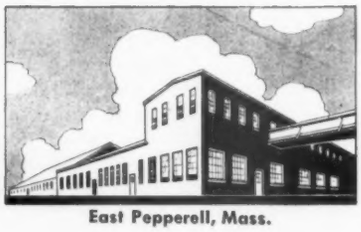
## ABOUT BEMIS MULTIWALL PAPER SHIPPING SACK FACILITIES

For years, Bemis has been a leading manufacturer of multiwall paper shipping sacks. Six plants, strategically located north, south, east, and west, have given Bemis customers in the cement industry the advantages of flexibility and capacity in production.

Even in the face of manufacturing and shipping difficulties during the past few years, this flexibility and capacity, plus the Bemis system of planned production, has enabled us to make an unusual record in fulfilling shipping promises and in maintaining quality for our regular multiwall customers.

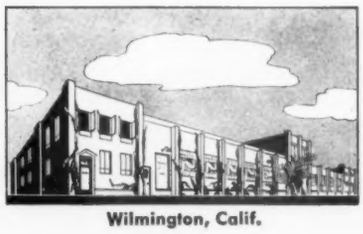
When you need multiwall paper shipping sacks for your rock products, think of Bemis. It pays to be a Bemis Multiwall Paper Shipping Sack customer.


Peoria, Ill.


East Pepperell, Mass.

Mobile, Ala.

San Francisco, Calif.


Wilmington, Calif.

St. Helens, Ore.

# Bemis Multiwall Paper Shipping Sacks

Peoria, Ill.
East Pepperell, Mass.

**6 PLANTS**

Mobile, Ala.
San Francisco, Calif.
Wilmington, Calif.
St. Helens, Ore.

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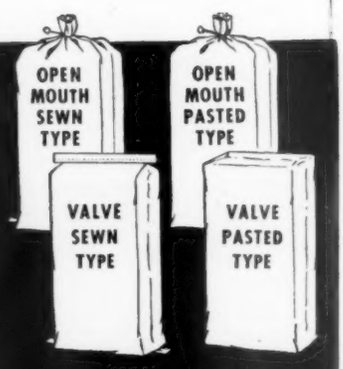
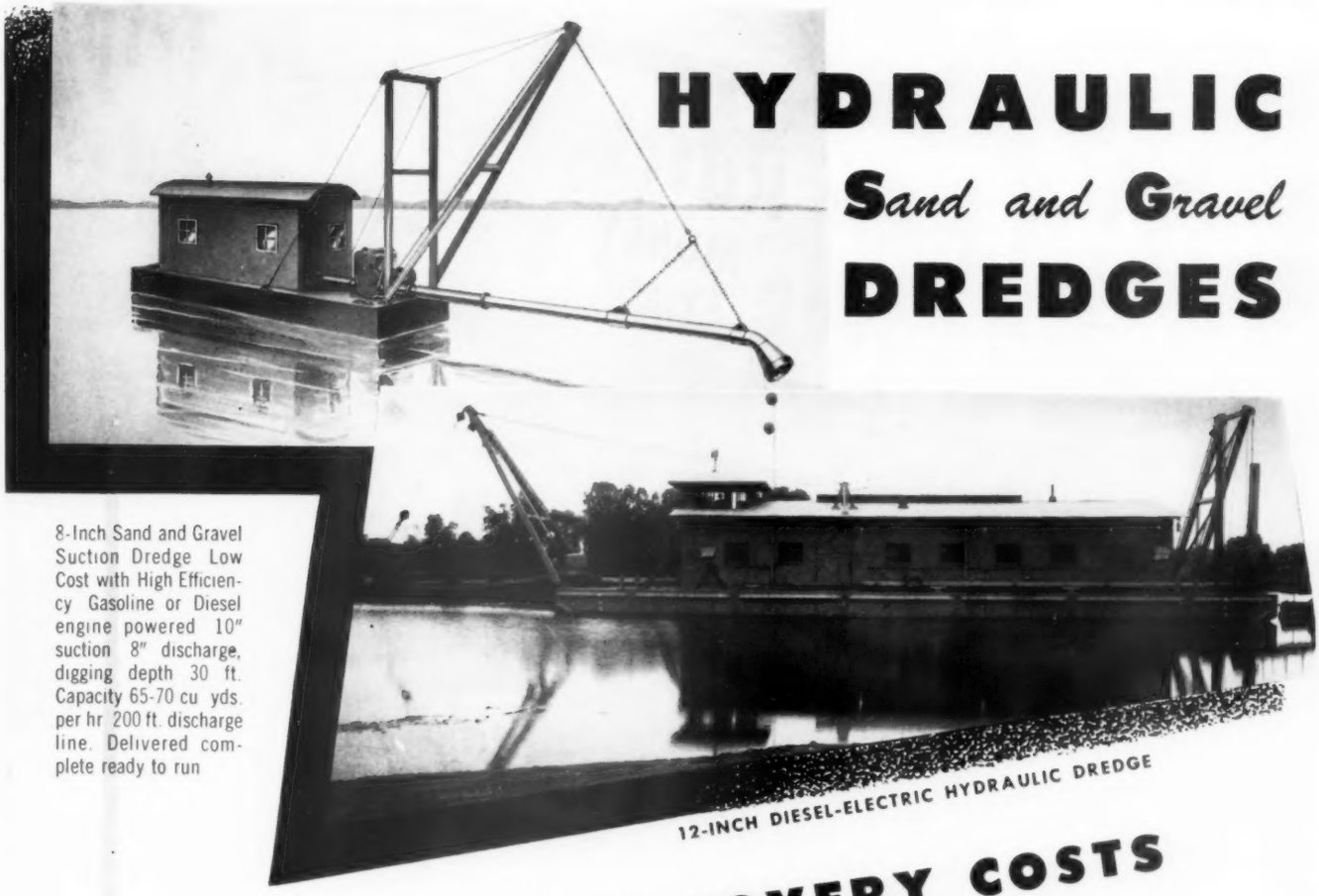


# HYDRAULIC
## *Sand and Gravel*
# DREDGES



8-Inch Sand and Gravel Suction Dredge Low Cost with High Efficiency Gasoline or Diesel engine powered 10" suction 8" discharge, digging depth 30 ft. Capacity 65-70 cu yds. per hr 200 ft. discharge line. Delivered complete ready to run

12-INCH DIESEL-ELECTRIC HYDRAULIC DREDGE

## *Designed for* LOWER RECOVERY COSTS

Engineered and built as a complete, highly efficient unit, ASD dredges are the result of 40 years of dredge building and operating experience.

## BOLTED STEEL HULLS

We furnish bolted steel hulls in several standard sizes. Replace your old hull with a new ASD bolted hull. Use your present pump, hoist and power plant. Write for quotations.

## *Let* ASD *Engineers Help You*

solve your dredging problems. If you need equipment in 1946 write NOW, giving details of operating conditions and size of dredge needed.

**AMERICAN STEEL DREDGE COMPANY, Inc.**

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## POSITIVE . . WORKS EVERY TIME

Every time, without fail, the same split second the operator pushes the release button, pawl and ratchet are positively engaged. Next, within a fraction of a drum rotation, the dipper door is open.

## TRIGGER-FAST . . ½ OF A SECOND

Dumping the dipper load at just the right second is easy. New Koehring Ratchet Dipper Trip has dipper door open in less than ½ of a second. Thumb-sized release button is right on top of the swing lever. Operator's hand never leaves the swing lever.

## NO CONTINUOUS ADJUSTMENTS

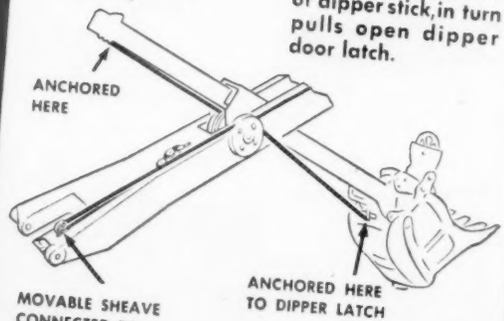
Properly installed, the Koehring Ratchet Dipper Trip needs no adjustment. There is no clutch band to tighten to compensate for wear. Works perfectly, without any adjustment, at any boom angle.

### HERE'S HOW SIMPLE IT IS

Thumb-sized release button is right on top of swing lever.

Pawl and ratchet are positively engaged when release button is pressed. Ratchet is mounted on drum shaft.

Through simple linkage, movable sheave on boom foot is pulled down when pawl and ratchet are engaged. Cable, anchored to either end of dipper stick, in turn pulls open dipper door latch.




**KOEHRING COMPANY,** *Milwaukee 10, Wis.*

KOEHRING HEAVY DUTY

**HEAVY-DUTY CONSTRUCTION EQUIPMENT**

# U.S. ROYAL BUTYL TUBES

Hold Air Longer-
Resist tears-
Withstand
More Heat-
Safety-Vented-

U.S. TIRES

The experience of truckers from coast to coast — the results of grueling tests in "U. S." laboratories — show new U. S. Royal Butyl Tubes far and away better than natural rubber in air retention, heat, tear and age resistance, and in consistent serviceability. Because the danger of under-inflation is minimized, new U. S. Royal Butyl Tubes increase tire life—add extra miles of trouble-free service at lower cost per tire mile.

**SPECIFY U. S. ROYAL BUTYL TUBES FOR LOWER COST PER TIRE MILE!**

***Phone Your U. S. Truck Tire Distributor Today!***

**HOLD AIR LONGER**

**U. S. Royal Butyl Tubes hold air far longer than tubes of natural rubber.**

**WITHSTAND MORE HEAT**

**U. S. Royal Butyl Tubes have superior heat resistance. They minimize roadside delays.**

**RESIST TEARS**

**U. S. Royal Butyl Tubes have higher tear resistance. They're easier to repair.**

**SAFETY-VENTED**

**Exclusive "U.S." Safety-Venting allows release of air trapped between casing and tube.**

## UNITED STATES RUBBER COMPANY

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# WHEN BLASTING IS BELIEVING

## Here's proof of remarkable results with

# ATLAS ROCKMASTER

## BLASTING SYSTEM

DAY AFTER DAY—in all sections of the country, under all kinds of conditions, in all types of quarries—Atlas Rockmaster is proving itself. "Doubting Thomases" are absolutely convinced. Quarry superintendents who have tried Rockmaster, are openly enthusiastic for this new system of blasting. Complaints from vibration are either entirely eliminated or greatly reduced. Fragmentation is amazingly improved . . . back break almost entirely wiped out.

Let the Atlas representative *show you* how the Rockmaster Blasting System saves time, trouble and money. Blasting is believing when you use Atlas Rockmaster. And remember, too, that you get

*the greater safety of*

**ATLAS MANASITE DETONATORS**

### CHECK THESE FEATURES

- ✓ **NOISE AND CONCUSSION** are drastically cut down.
- ✓ **ROCK BREAKAGE** is decidedly more complete.
- ✓ **SECONDARY BLASTING** is reduced to a minimum.
- ✓ **BACK BREAK** can be greatly reduced.

*Identify the ROCKMASTER by the Blue Color.*

**GRANITE (Georgia)**
*"The Rockmaster blast was under perfect control . . . report was muffled . . . vibration negligible . . . all rock was held on quarry floor. There was* no *back break."*

**VERY HARD TRAP ROCK (New Jersey)**
*"Rockmaster at least 40-50% better than previous shots . . . obtained better breakage and noticed reduction in vibration."*

**CEMENT (Indiana)**
*" . . . practically eliminated vibration at this quarry along with much better fragmentation than ever before with* no *back breakage."*

**LIMESTONE (Ohio)**
*"Made two shots today, one 20 holes and one 16 holes. Neither of these blasts was heard in the quarry office, so vibration and concussion were practically eliminated."*

**CEMENT (Pennsylvania)**
*"Stone production up 20%. So far only 3 sticks of dynamite have been used for secondary shooting."*

***Less bark . . . more bite with* ATLAS ROCKMASTER**

# ATLAS EXPLOSIVES

*"Everything for Blasting"*

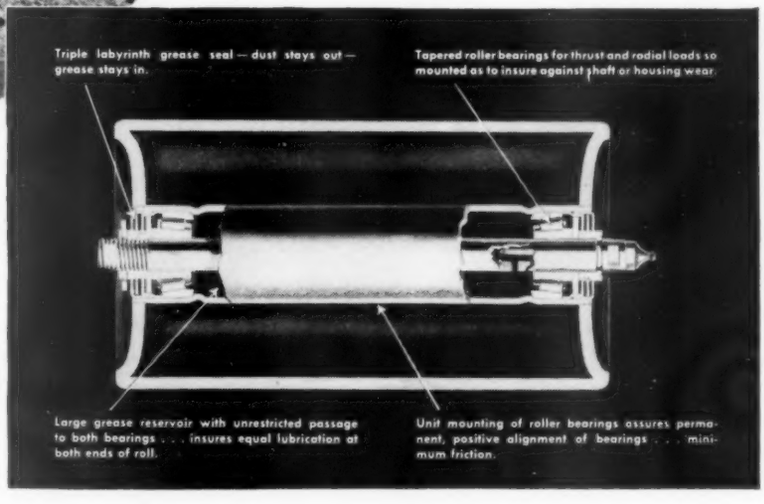
CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

# BEST
## FOR THE LONG RUN ... AND LONG LIFE!

**① FOR LONG DISTANCE CONVEYING,** Rex Belt Conveyor Idlers are hard to beat! And they're equally good when it comes to service. For example:

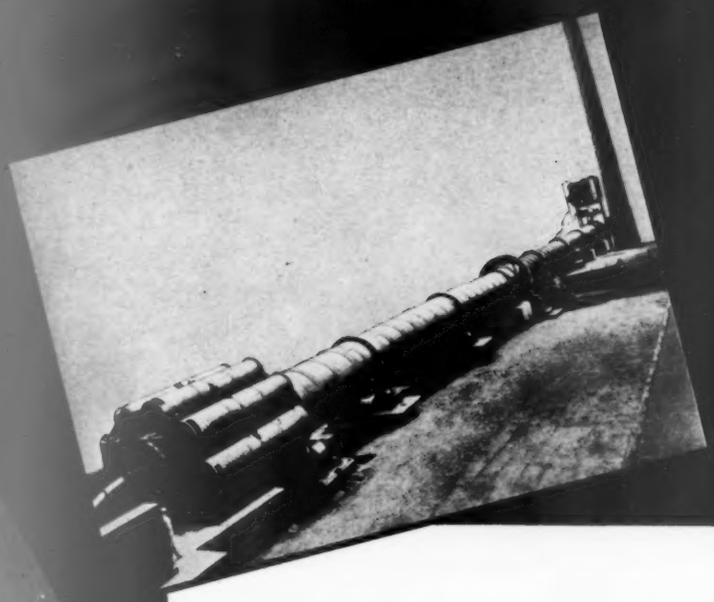
**② IN THIS QUARRY,** three 750-foot belt conveyor units equipped with Rex Belt Idlers haul rock from crusher to surge pile. A fourth conveyor is located under the surge pile and operates in a tunnel. This system permits the crushing-screening plant to operate without being wholly dependent upon the shovel crew. The belt speed is 550 feet per minute and capacity is 600 tons of rock per hour.


Triple labyrinth grease seal — dust stays out — grease stays in.
Tapered roller bearings for thrust and radial loads so mounted as to insure against shaft or housing wear.
Large grease reservoir with unrestricted passage to both bearings . . . insures equal lubrication at both ends of roll.
Unit mounting of roller bearings assures permanent, positive alignment of bearings . . . minimum friction.

**③ AND AS FOR LONG LIFE,** these Rex Belt Idlers served for four years of virtually continuous use in the 9.6 mile long Shasta Dam conveyor and handled over 12 million tons of aggregate. Now they're working on this job and they're as good as ever. That's real service and a glance at this cross-section will tell you why they're so good. For more data, see your Rex Man or write us direct.

# REX BELT CONVEYOR IDLERS
*for efficient handling of bulk materials*

**CHAIN BELT COMPANY OF MILWAUKEE • 1604 W. Bruce Street, Milwaukee 4, Wis.**



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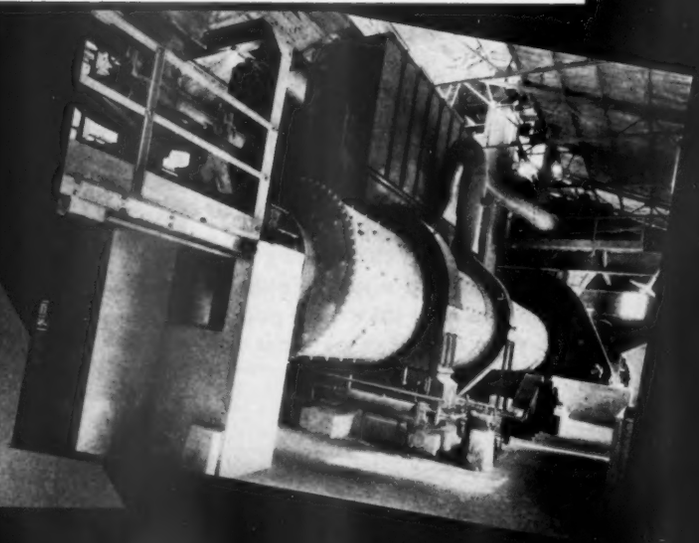
## Machinery for Cement-Lime-Ore

In addition to a complete line of Rotary Kilns and Grinding Mills, F L. Smidth & Co. also manufacture Coolers, Pre-Coolers, Pre-Heaters, Recuperators, Air Separators, Agitators, Packers, Extractors, Feeders, Burners, etc. and their auxiliary equipment, for the manufacture of Cement, Lime, Ores, and Allied Products

GRINDING MILLS



F. L. SMIDTH & CO.

11 WEST 42ND STREET — CEMENT ENGINEERING CEMENT MACHINERY — NEW YORK, N. Y.

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**Reasonably priced for substitute uses**

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Over 50,000 tons of hot rolled and cold finished carbon and alloy steel bars in rounds, squares, flats and hexagons, priced downward—for substitute uses.

Budget priced, these 50,000 tons consist of 25,000 tons of carbon and 25,000 tons of alloy H.R. & C.F. bars, in sizes to meet your immediate requirements.

In addition, there are 60,000 tons of carbon and alloy billets, blooms and slabs. These semi-finished products are also priced for quick delivery in meeting the demands for substitute uses. If you qualify for credit, terms may be arranged. For detailed specifications, grades, sizes, deliveries and F.O.B. prices, simply write, wire or phone the nearest RFC Agency listed below.

**WHAT ARE YOUR REQUIREMENTS? — CHECK THIS LIST**

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3. Structural Steel Shapes . . . . . ☐
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157-2

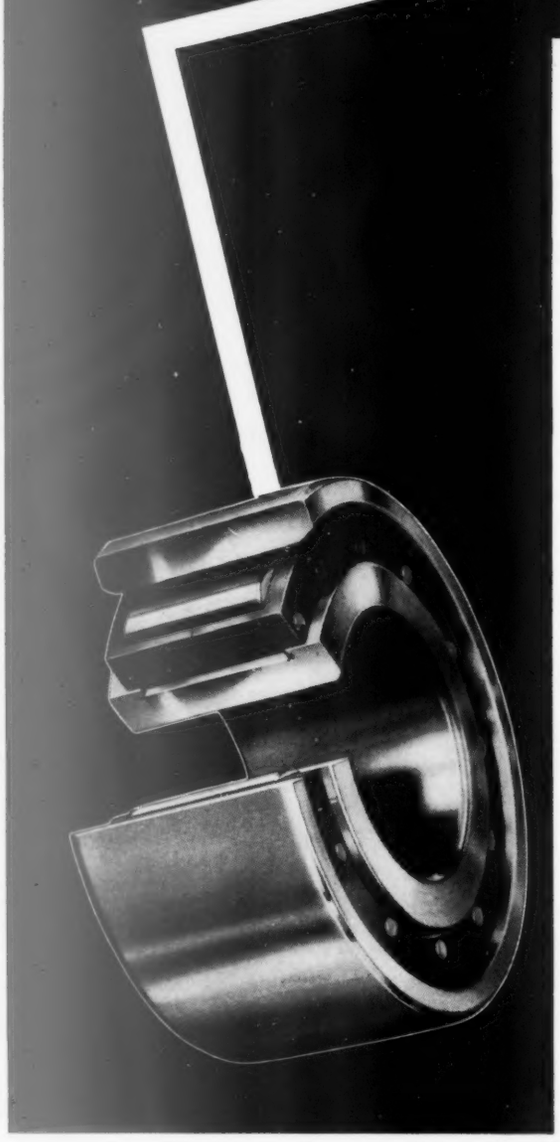
*Cut down on*

# MAINTENANCE Shut-downs

WITH

# ROLLWAY

RIGHT-ANGLE LOADING



**Now**—when you are sweating out production to catch up with peacetime demand—when every shut-down means lost marketing opportunity as well as costly labor and machines standing idle—give Rollway *right-angle loading* a chance to prove what it can do for you in the way of preventive maintenance.

Rollway Right-Angle Roller Bearings will help your machines to run longer under heavier loads . . . with lower maintenance cost . . . and low bearing-replacement costs. That's because Rollway *right-angle loading* splits all compound loads into the two simple components of pure radial and pure thrust . . . carries each of these components on a separate bearing assembly at *right angles to the roller axis*. It reduces the unit loading on rollers and bearings. Insures lower starting and running torque. Eliminates all resultants from oblique loads, all piling up of thrust and radial loads on the same bearings. That's why you get longer periods of precision operation, with fewer shut-downs for service or replacement.

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# "This is Reinforced Primacord . . . for deep and ragged holes"

Reinforced Primacord is recommended for use in deep and ragged holes where extra tensile strength and resistance to abrasion are needed. Its detonating core of PETN is equal to that of Plain Primacord, but its additional cotton countering gives Reinforced Primacord a tensile strength of 160 pounds.

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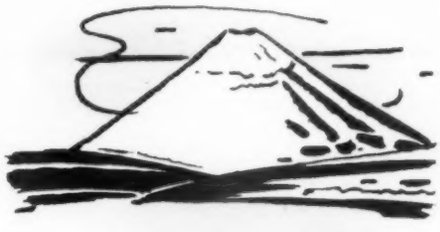
Two other standard types of Primacord-Bickford Detonating Fuse are available: Plain, for shallow holes and surface trunk lines; Wire Countered, for extremely deep or ragged holes where maximum resistance to abrasion is important.



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P-15

**PRIMACORD-BICKFORD** Detonating • Fuse •

# How

## B-G Bucket Loaders

# Save Truck Time

• Saving truck loading time is the equivalent of adding trucks to your fleet. And, Barber-Greene Bucket Loaders *are* saving truck time every day through their high capacity and efficiency in loading from stock piles. They're specially designed for this job—a job no other method approaches from the standpoint of saving time.

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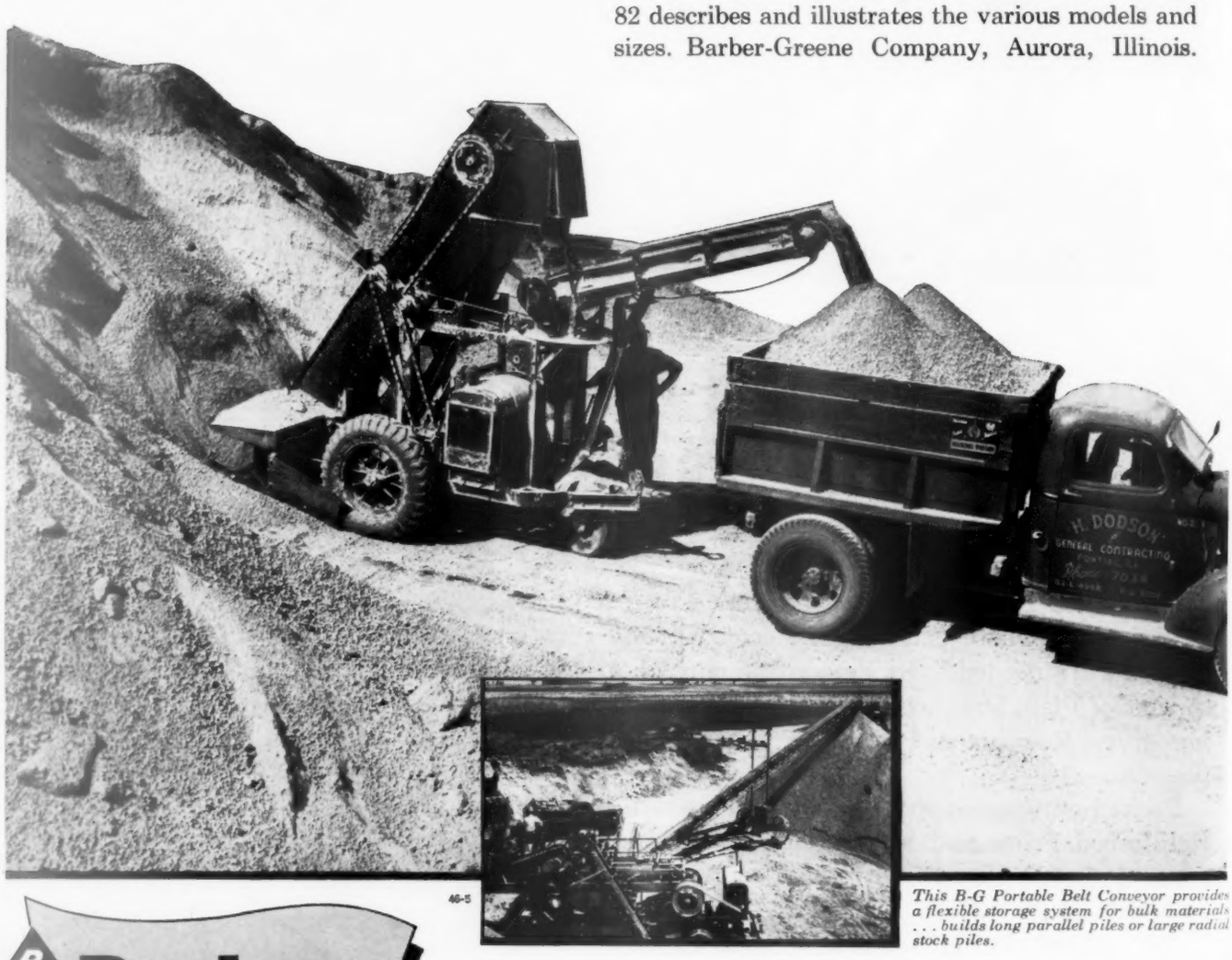
The Barber-Greene Bucket Loader Catalog No. 82 describes and illustrates the various models and sizes. Barber-Greene Company, Aurora, Illinois.

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*This B-G Portable Belt Conveyor provides a flexible storage system for bulk materials . . . builds long parallel piles or large radial stock piles.*

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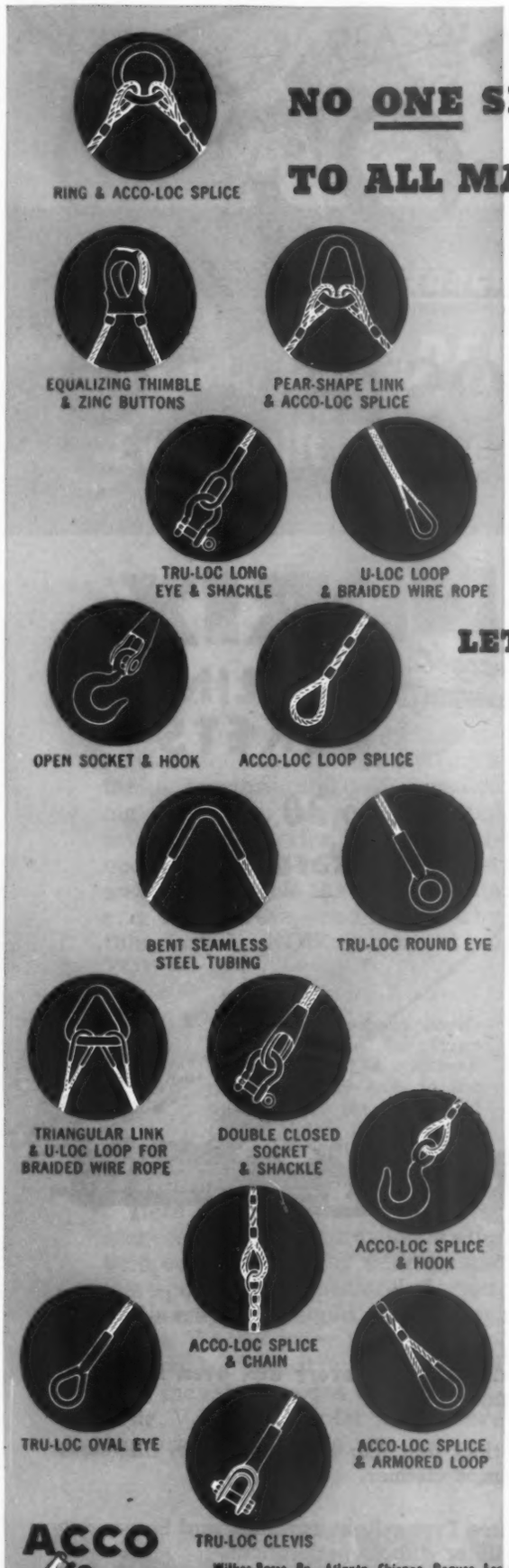
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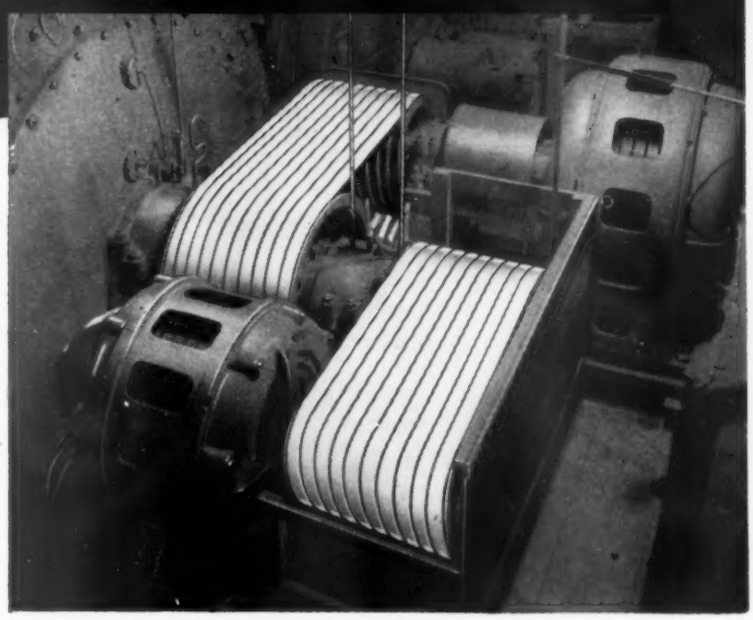
*It's the REASON for this Fact that's important*

## Your *Standard* GATES VULCO ROPES Are Today *OUT-PERFORMING* Any V-Belts Ever Built Before



Early in the war it was found that **no** V-belts then being built by **anyone** could stand the combat-service requirements of the Army's tanks, tractors, and self-propelled big guns. For this unprecedented severity of service, Gates developed and built V-belts far stronger and more durable than any V-belts ever built before—and here is why this fact is NOW important to YOU:—

*HERE is the reason*

**Every improvement developed by Gates for these Army V-belts has also been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.**

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# TODAY-as during the war years conserve your equipment

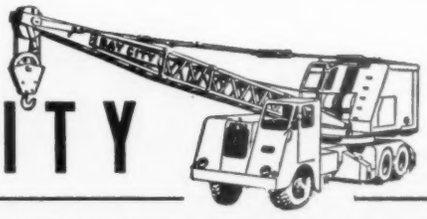
★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

NO other period in our history has so strengthened the loyalty of BAY CITY machine owners as the years of war production from which we recently emerged.

While we, at BAY CITY have been busy, night and day, filling war contracts our big family of users has appreciated, more than ever before the extra ruggedness and dependability of their equipment. They—and perhaps you are one of the family—have confirmed their judgment and belief that BAY CITY had the stamina—yes, the "guts"—to stand up on the job. They are glad the speed, the engineering refinements, the versatility of their cranes and shovels helped carry them through when new equipment was impossible to get.

Now that thousands of new shovels and cranes are needed, we are being swamped with a disproportionate demand. We are building quality cranes and shovels at an accelerated rate. Yet, we cannot turn out BAY CITY equipment as fast as necessary to meet promptly all requirements for new machines.

So, we say—conserve your equipment as you did during the war years. Anticipate your needs for repair parts to replace those which have become worn from overwork. Rebuild your old BAY CITY—put it in efficient operating condition for the spring construction season—make it last until normal peacetime conditions return and new BAY CITY equipment is again readily available. Your nearest Dealer will be glad to help or write direct to BAY CITY SHOVELS, INC., Bay City, Michigan. Complete stock of repair and service parts of our manufacture available for quick shipment.

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CRANES • HOES • CLAMSHELLS

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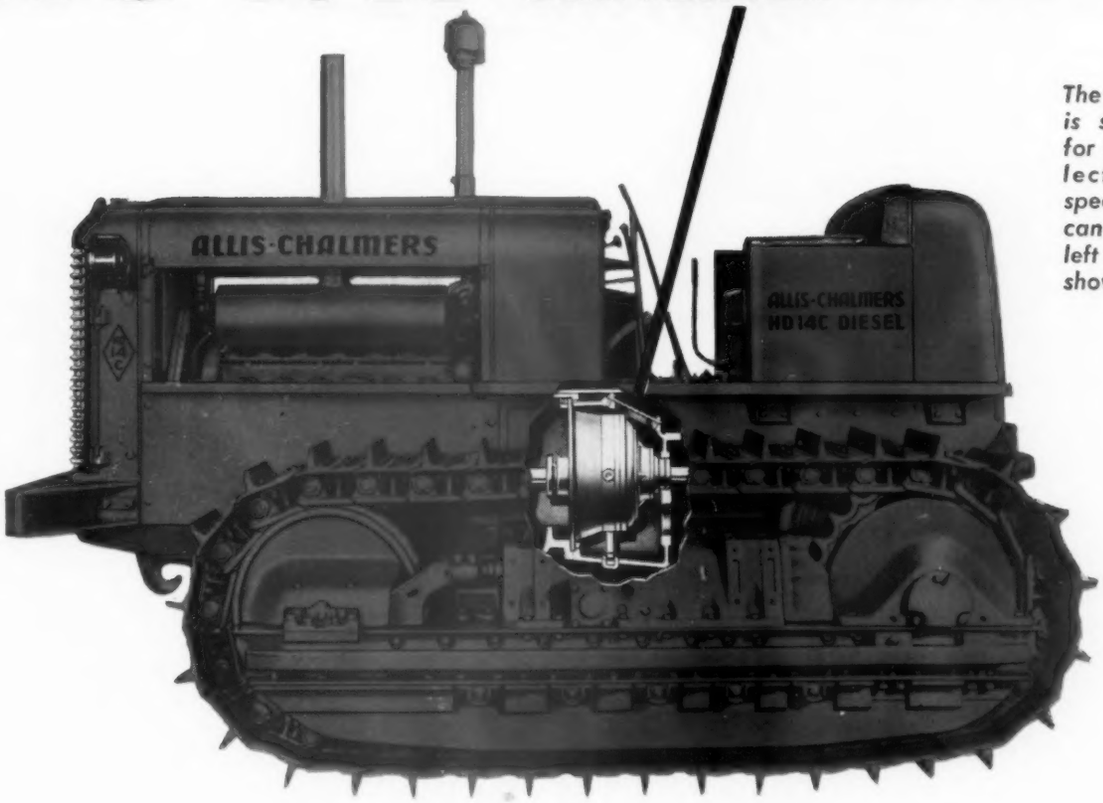



*The torque converter is simply a device for automatically selecting maximum speed at which load can be moved. At left is cutaway view showing location in tractor.*

## ALLIS-CHALMERS MEETS THE NEED

**Here it is . . . the tractor of the times . . . torque converter driven . . . tried, tested, proved over the last five years on every type of construction work . . . now in full production! It's revolutionary — different from any tractor you've ever seen . . . amazing, the way it smooths out and steps up tractor performance.**

25% MORE WORK **is accomplished because horsepower output of engine is held near maximum — the torque converter balances tractor speed with load to give maximum operating speed at all times. This means many more yards moved.**

LESS GEAR SHIFTING, **less operator fatigue, because the torque converter instantly, automatically does, in effect, what the operator of a conventional tractor accomplishes when he shifts gears — makes available the necessary pull or push to handle the load. The engine cannot be overloaded or stalled — keeps running even when an extreme overload pulls tractor to a standstill.**

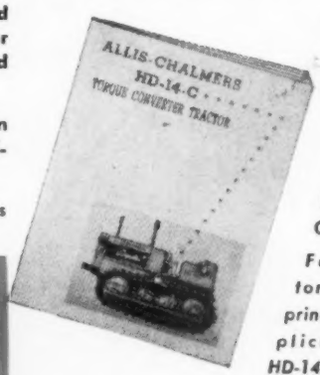
SMOOTHER OPERATION — **longer tractor life and longer life of auxiliary equipment is assured by smoother operation. There is gradual acceleration and even application of power — of particular advantage in lengthening the life of cable.**

CUSHIONED PROTECTION — **cushion of oil eliminates solid contact between engine and power train, protecting all parts of tractor and auxiliary equipment against shock and abuse.**

MORE ACCURATE CONTROL — **operator can inch into any desired position smoothly, gradually, safely.**

SIMPLIFIED DRIVE — **the torque converter is a simple mechanism, only two moving parts separated by a cushion of oil. In addition, transmission is simplified — three forward speed ranges cover every need, with operation in any gear from zero to maximum — up to 2.89, 3 61, 7.13 m.p.h. . . . to 3.36 m p.h. reverse.**

**You will want to investigate these and the many other advantages of this revolutionary, money-making Diesel tractor. Get all the facts from your Allis-Chalmers dealer.**

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*Fully explains torque converter principle and its application to the HD-14-C.*

**ALLIS-CHALMERS**
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

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## *are switching to Job-Rated trucks*

IT WAS no "wartime secret" that owners of Dodge *Job-Rated* trucks experienced consistent "on-the-job" operation. Because their trucks *fit the job*, they performed more efficiently, operated more economically, lasted longer.

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**WARTIME YEARS PROVED PLENTY**

**Two "eye-opening" facts that will long be remembered by men to whom trucks were a "bread and butter" proposition during wartime, are these:**

**1** There's no substitute for years of truck-building experience, or for precise workmanship and quality . . . major reasons for the economy, dependability and long life of Dodge Job-Rated trucks.

**2** Dodge Job-Rated trucks stayed on the job because of the ready availability of Dodge TRUCK PARTS and because of the prompt, efficient truck service of Dodge dealers.

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**FIT THE JOB . . . LAST LONGER**

# HANDLES LIKE A *featherweight*

*Fastest Hitting In Its Class!*

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**NO. 28—30 POUND SINKER**

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*Here's proof!* Fifty different mines tested the new Thor "28" Sinker . . . *first*. And every one of these fifty operators immediately placed orders for the drill!

These operators *know already* the speed . . . plus the handling ease of Thor's "featherweight"—only 30 pounds complete. They *know already* that in the "28's" smooth compactness are all these same advantages of Thor's rock drilling heavyweights;

*Short-travel valve* *Powerful rotation*

*Powerful hole blowing*

*Low cost, easily replaceable chuck*

Ask for a demonstration of the "28" before you buy another rock drill!



*The Thor "28" is furnished as pictured for wet or dry operation, with ⅛-inch hexagon or quarter octagon chuck. Thor's famous forged steel retainer (inset above) and side exhaust are optional equipment.*

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PIT AND QUARRY

February, 1946

Vol. 38 No. 8

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# EDITORIAL

## *Laws Against Strikes*

THE present period of industrial strife is certain to bring forth, as other similar periods have done, many legislative proposals designed to improve industrial relations. It is, perhaps, expecting too much to hope that bills prepared during the heat of battle will reveal either a logical or an impartial approach toward an understanding of the problems that underlie current disturbances—since they are more likely to show a desire to retaliate against real or fancied injuries than to provide a well-reasoned plan for preserving or promoting the general good—but the seriousness of the problems that confront the nation in the field of industrial relations demands that careful consideration be given to every proposal that appears to hold any promise of providing relief. "Public" resentment against the current wave of strikes, which have all but paralyzed certain industries, should not be reflected in the legislative proposals offered as solutions of our difficulties. If a "cooling-off" period is a desirable means of reducing the number of industrial conflicts, a similar period may be no less valuable as a means of preventing the passage of ill-advised and insufficiently-studied bills by legislators giving vent to their passions or responding to the call of pressure groups. Legislation hastily conceived, hastily drawn and hastily enacted is more likely to create new problems than to solve existing difficulties in the public interest.

As these words are being written, the House of Representatives is scheduled to give early consideration to a bill presented by Representative Case of South Dakota. His proposal sets up a three-party mediation board composed of representatives of management, labor and the public. If either a strike or a lockout is contemplated, five days' notice must be given to the board, which, if it believes that the dispute involves the "national interest," can order a 30-day postponement, during which period the parties interested in the outcome of the conflict must make every effort to reach an agreement by mediation or arbitration. It sets aside the Norris-La Guardia anti-injunction law of 1932 by giving to employers the right to seek relief by injunction in cases of breaches of contracts by labor unions and makes them and their members liable for damages. Picketing is restricted by extending the customary ban on the use of force or violence to threats of force or violence. The right of an employee to reinstatement or back pay under the Wagner Act is denied him if he has engaged in violence, intimidation, or "unlawful destruction or seizure of property in connection with a labor dispute". Certain specified supervisory employees, such as foremen, will lose the collective-bargaining rights given them by that law.

The Case bill represents in part an effort to establish a balance between the power of the employer and the employee by making both parties to a labor contract liable for its breach, and, in that way, to correct a defect in the Wagner Act, which many workers as well as employers believe imposed liability on the employer only. It lays emphasis also on the use of violence, which is a deplorable element of many labor conflicts whether it results from the desperation of workers or from the provocation provided by strikebreakers or special police employed by management.

Even if it should be passed without the weakening amendments which are almost certain to be attached to it on its way through both houses of the Congress, it is doubtful whether the Case bill would have any of the quieting effects expected of it by its sponsors, or succeed in destroying labor unions, which, in the belief of some of its supporters, is its chief objective. The Connally-Smith bill, officially known as the War Labor Disputes Act, also provided for a 30-day "cooling-off" period in the case of threatened strikes in industries in private hands, but the unions survived it, just as they have survived struggles in which violence reached the stage of bloodshed and large segments of "public opinion" were alienated.

THOSE who look for the destruction of labor unions through the passage of restrictive legislation are, in our opinion, indulging in wishful thinking. Labor organizations will continue to live and thrive as long as areas of discontent continue to exist in the field of industrial relations. The strike is the most important weapon possessed by labor and there is no likelihood that it will be abandoned as long as it produces results. Nor will anti-strike laws cause men to give up a crusade they believe in or to lay aside the only tool which has proved effective in furthering it.

Management has shown great skill, diligence and ingenuity in the conduct and expansion of private enterprise. It has collected and organized the implements of production; it has opened and developed markets; it has fostered research and the design of new products; it has met and overcome many of the difficulties of competition; it has catered to customers' tastes and requirements; and it has made a profit. In all these various forms of business activity its record has made this country the shining example of private enterprise at its best. Yet the attainment of industrial peace still remains the greatest challenge to the ability of management to manage.

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wherever . . . whenever you need it

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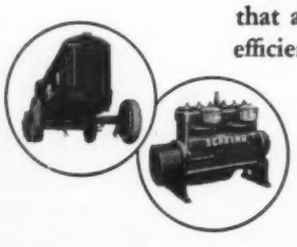

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ENGINEERING HALL, UNIVERSITY OF ILLINOIS

# *A Leading University*

## USES BUELL FLY ASH PROTECTION

POWER PLANTS throughout the industries and institutions that serve America recognize the efficiency of Buell (van Tongeren) Collectors as a protection against fly ash dispersion.

Among the various power plants using Buell Fly Ash Collectors is a leading American educational institution, the University of Illinois at Champaign. The plant of the University has used six Buell Collectors with its stoker-fired boiler, for the elimination of fly ash, over a period of several years.

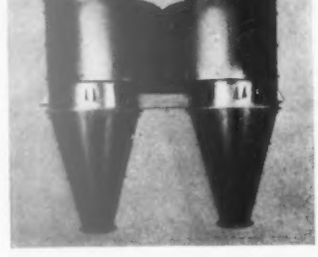

Illustration shows typical unit of a battery of six Buell Fly Ash Collectors installed with stoker fired boiler in power plant of University of Illinois.

In fact it may be said that power plants employing Buell Collectors represent a fair cross-section of American industry. They include such well known concerns as: BETHLEHEM STEEL COMPANY, STEELTON, PA., PHILADELPHIA NAVY YARD, WESTVACO CHLORINE PRODUCTS CORPORATION, CONNECTICUT LIGHT AND POWER COMPANY, JACOB RUPPERT BREWERY.

*Detailed information on Buell Collectors to meet your specific fly ash requirements will be gladly furnished upon request.*

BUELL ENGINEERING COMPANY, INC.
Suite 5000, 12 Cedar Street, New York 5, N. Y.
*Sales Representatives in Principal Cities*

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DUST RECOVERY SYSTEMS

PIT AND QUARRY

CHICAGO

FEBRUARY, 1946

## Building Industry Group Appointed to Aid Govt. In Housing Emergency

The appointment of a housing industry committee to cooperate with the Government on a public information program on the housing emergency, particularly as it affects veterans, was announced by John B. Blandford, Jr., N.H.A. administrator. Howard B. Smith, director of the Department of Real Estate Finance, American Bankers Association, the author of the resolution, was asked to act as chairman.

Members of the committee represent, in addition to the Office of War Mobilization and Reconversion and the N.H.A., the U.S. Chamber of Commerce, seven national associations intimately concerned with the construction industry, the Congress of Industrial Organizations and the American Federation of Labor.

## $7,000,000 Expansion Plan Announced by Celotex

Bror Dahlberg, president of the Celotex Corporation, has announced that the firm plans to spend $7,000,000 for enlarging its facilities to meet the anticipated construction boom. At Marrero, Louisiana, said Mr. Dahlberg, the annual production of the Celotex plant will be increased to 750,000,000 feet. At Stonebridge, England, the British plant will raise its annual output to 150,000,000 feet.

Mr. Dahlberg stated that Celotex plants are at present operating at only about 60 per cent. capacity, because of the current labor shortage.

## Pacific Coast Aggregates To Build $300,000 Plant

Construction on a $300,000 crushed rock and gravel plant is due to begin early this year at the site leased by Pacific Coast Aggregates, Inc., at Stockton, California. The products of the plant will be washed gravel and sand and crusher-run rock for road building. The combined capacity of the two products is expected to be 400 tons per hour.

The Stockton project is one part of the company's expansion program, which was announced in the November, 1945, issue of PIT AND QUARRY. Present plans envision the expenditure of about $1,420,000, realized from the sale of stock, for new construction at Eliot, Kerlinger and Sacramento and for equipment and additions at Oakland, Fair Oaks and Daly City, California.

President A. K. Humphries stated that the company had spent $600,000 in replacement and rehabilitation and $1,000,000 for expansion since 1938.

## Dia-Cousti-Lite Plant Operating at Quincy, Wash.

Rumors that Quincy, Washington, had added a flour mill to its industries were quelled when it became known that workers in the building, from which clouds of a white flour-like dust sometimes issue, are processing diatomaceous earth. The plant, built by Dia-Cousti-Lite Products Company at a cost of nearly $75,000, is shipping daily from 20 to 25 tons of "white earth," a substance mined from an 88,000-ton deposit at the edge of the Grand Coulee. It is found in 10,000 varieties and is composed of the fossilized skeletons of the diatom, a minute primitive form of vegetable life. It is said to have at least a thousand commercial uses.

The Dia-Cousti-Lite Products Company is owned and operated by O. F. Gibson and E. E. Huffman.

## *Coming Events*

*February 25-28, 1946—Chicago.* Annual meeting, American Institute of Mining and Metallurgical Engineers, Palmer House.

*February 25-28, 1946—Chicago.* Annual meeting and show, National Association of Home Builders, Stevens Hotel.

*February 25-March 1, 1946—Pittsburgh.* Spring meeting, American Society for Testing Materials.

*March 28-30, 1946—Hot Springs, Va.* Annual convention, National Lime Association, The Homestead.

*April 3-5, 1946—Chicago.* Annual meeting, Midwest Power Conference, Palmer House.

*June 24-28, 1946—Buffalo.* Annual meeting, American Society for Testing Materials and exhibit of testing apparatus and related equipment.

## Universal Atlas Plants At Duluth, Independence, Win 1945 Safety Awards

The Duluth, Minnesota, plant and the Independence, Kansas, plant of the Universal Atlas Cement Company, United States Steel Corporation subsidiary, made perfect safety records in 1945 by completing the calendar year without a single lost-time accident. Both plants are eligible for re-award of the Portland Cement Association safety trophy.

This is the tenth such award for the Duluth plant, which has made a number of safety records. In competition with other local industries, it received three awards from the safety bureau of the Duluth Chamber of Commerce, the safety flag of the governor of Minnesota and permanent possession of the W. A. McGonagle and the C. E. Carlson silver cups for operating three consecutive years with the lowest accident rate in the Duluth area. From January 10, 1931, to March 5, 1935, it operated for 1,515 consecutive days without a lost-time accident. Again from October 22, 1937, to October 5, 1940, it operated for nearly three consecutive years (or nearly a million manhours) without a lost-time accident. Fred Robinson is plant manager and E. G. Staley is supervisor of safety and labor.

The Universal plant at Independence likewise has established several notable safety records, including seven annual awards of the Portland Cement Association. From December 31, 1930, to March 11, 1934, it operated for 1,166 consecutive days, or a period of more than three years, without a lost-time accident. Again from January 19, 1938, to September 9, 1941, it had a perfect safety record for 1,329 consecutive days. Paul Kirkbride is plant manager and C. A. Miller is supervisor of safety and labor.

## Goodrich Played Big Role In Shasta Dam Project

The part played by the B. F. Goodrich Company's conveyor belts during the vast construction program of Shasta Dam has been described in a folder recently published by the company. Goodrich furnished 17,870 feet of 36-inch conveyor belt, which carried 12,000,000 tons of aggregate on a non-stop working schedule throughout the period of construction.

The Shasta Dam project was fully described in PIT AND QUARRY in the March, 1941, issue.

## New Priority System For Building Materials Favors World War II Vets

Reports from the 71 field offices of the Federal Housing Administration indicate that a new priority system (designated HH) is now operating for scarce building materials to expedite construction of housing costing under $10,000. Moreover, preference will be given to World War II veterans.

F.H.A. Commissioner Raymond M. Foley announced that forms are available at all F. H. A. offices for individual veterans who want to build their own homes, as well as for persons intending to erect buildings for sale or rental for which veterans will be given preference. Processing of the applications is to be done by the F.H.A. without reference to the type of financing proposed. Commissioner Foley stated that one objective of the new system is to prevent inflation in the price of new homes.

## American Gilsonite Co. Works Valuable Deposit

The American Gilsonite Company is a new concern recently formed by the Standard Oil Company of California and the Barber Asphalt Corporation to develop what has been described as the world's only known important source of gilsonite. The gilsonite fields, located in eastern Utah and western Colorado, were owned by the Barber company. This comparatively unknown mineral is a hard, shiny black substance closely related to petroleum and said to have many valuable uses for the manufacturing post-war devices.

The new company will be headed by Clarence F. Hansen, former chief engineer of Standard's manufacturing department in California.

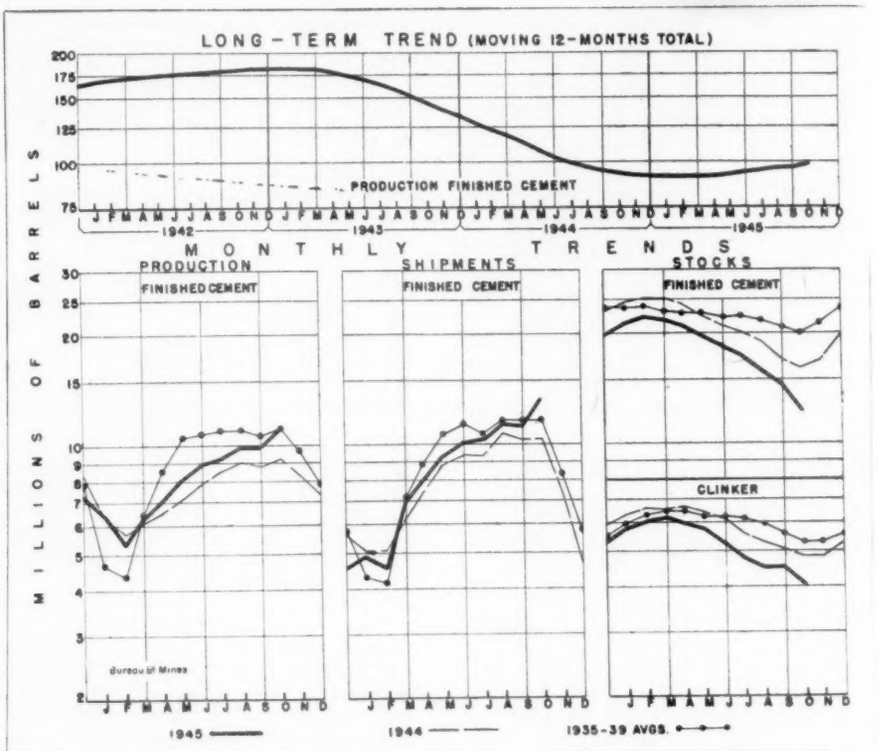
## Rehabilitation Finished At Two Wolverine Plants

Work has been virtually completed on the rehabilitation and reconditioning of the Wolverine Portland Cement Company's plants at Coldwater and Quincy, Michigan. It is anticipated that with enlarged facilities and new equipment, full-time production at the two plants will total approximately 25,000,000 pounds of cement each month, beginning in March.

## South American Engineers Tell of Highway Plans

A commission of South American highway engineers recently arrived in Washington, D. C., as guests of the American Road Builders' Association, the Office of Inter-American Affairs and the Public Roads Administration. Members of the group are Senor Oscar Risopatron Berredo of Chile, Senor Luis A. Mino of Ecuador and Senor Jorge Lopez V. of Bolivia. They will spend three months in this country, studying American construction methods and equipment.

According to Senor Berredo, Chile will spend $11,000,000 a year for highway construction and equipment for the next six years. One of the major post-war highway projects is a two-mile tunnel to be constructed through the Andes Mountains on the highway connecting Valparaiso and Santiago, Chile.




Production of 11,104,000 barrels of finished Portland cement in October, 1945, reported to the U. S. Bureau of Mines, was 21 per cent. above the output reported in October, 1944, and is also the largest single month's production in the first ten months of 1945. This increased output is spread over all districts with the exception of California and Iowa, which show a decrease of 1 per cent. and 19 per cent., respectively, from the October, 1944, total. The increases range from 2 per cent. in the Colorado-Wyoming-Montana-Utah-Idaho district to 70 per cent. in Ohio. Mill shipments of 13,303,000 barrels were 30 per cent. above those reported in October, 1944. Mill stocks continued to decline and were 23 per cent. below those reported on October 31, 1944. The continued upswing in the long-term trend of activity in the Portland cement industry is indicative of the expansion of private industry in the reconversion period. Clinker production in October, 1945, was 19 per cent. above that reported in October, 1944. Total production for the first ten months of 1945 was 10 per cent. above that reported for the corresponding months of 1944.

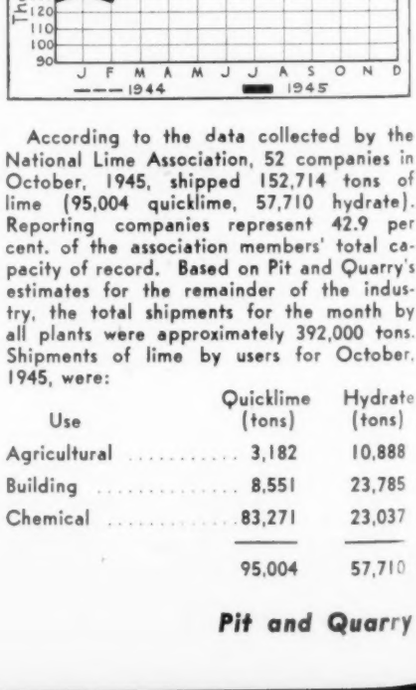
## $30,000 Fire Sweeps Plant After Truck Explosion

A fire which resulted in damages estimated at $30,000 recently swept the quarry and plant of the E. C. Schroeder Company at Wyalusing, Wisconsin. The blaze, which originated when a truck exploded, spread to shops, tool rooms and the garage.

## Canadian Gypsum Co., Ltd. To Rebuild Western Plant

Plans are now being drawn up for the new plant of the Canadian Gypsum Company, Ltd., of Toronto, to replace the buildings at Weston, Ontario, destroyed by fire in February, 1945. The new layout will call for the expenditure of approximately $400,000.

The Hercules Cement Corporation of Philadelphia has announced a change of address for its general offices, which now are located at 1420 Walnut Street, Philadelphia 2.




According to the data collected by the National Lime Association, 52 companies in October, 1945, shipped 152,714 tons of lime (95,004 quicklime, 57,710 hydrate). Reporting companies represent 42.9 per cent. of the association members' total capacity of record. Based on Pit and Quarry's estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 392,000 tons. Shipments of lime by users for October, 1945, were:

| Use | Quicklime (tons) | Hydrate (tons) |
|---|---|---|
| Agricultural | 3,182 | 10,888 |
| Building | 8,551 | 23,785 |
| Chemical | 83,271 | 23,037 |
| | 95,004 | 57,710 |

## Vast N. Y. Hiway Program Urged—N. Dak. Official Calls for New Planning

New York State will launch a billion-dollar program for construction of highways and other public works if the legislature follows the recommendations advanced by Gov. Thomas E. Dewey in his annual message.

Governor Dewey revealed that the idea of toll financing had been abandoned for the $202,000,000 New York-to-Buffalo thruway, on which construction is scheduled to start this spring.

The governor said that $400,000,000 in state funds was now available to start financing his proposed billion-dollar public works program. Highways, parkways, grade crossings and canals will be allocated $255,000,000.

Of the remaining $600,000,000 needed to complete the highway program, about $200,000,000 of Federal aid is expected over a period of six years, he said. "The balance of $400,000,000," he added, "will have to met out of general fund revenues in the next few years at a rate to be determined by the speed at which the program progresses."

Governor Dewey declared that the proposed thruway "will save enough money that would otherwise have to be spent in widening existing routes through congested areas to defray practically the entire cost. . . ."

Approximately $100,000,000 will be spent in North Carolina's highway program for the next three years, according to Gov. R. Gregg Cherry.

"It appears," he said, "that all funds necessary to finance the program are either on hand, starting with a reserve of more than $36,000,000 in the highway fund, or in sight through accumulating revenues and Federal highway grants."

A warning that unless North Dakota drastically alters its over-all highway program, "the net result in ten years will be a depreciated highway condition worse than anything we have ever experienced," was sounded by State Highway Commissioner N. Owen Jones in a report on the condition of the state's highway maintenance and construction program.

Mr. Jones declared that North Dakota "should spend nearly $80,000,000 for construction alone in the next 10 years to provide the minimum highway facilities that are needed." The commissioner said that more than 2,400 miles of the 3,992 miles of the federal aid primary system and more than 500 miles of the federal aid secondary system are "entirely inadequate and must be rebuilt." This is nearly half of the state highway system's total mileage of 7,223 miles.

North Dakota must pay at least half of the nearly $80,000,000 which the report says is needed for construction alone. "In addition," it continued, "North Dakota should spend in excess of $4,000,000 a year for state highway maintenance."

The highway commissioner estimated the department's 1945 income for maintenance and operation purposes at $700,000 from the one-cent gasoline tax is earmarked by law for retirement of highway revenue anticipation certificates authorized by a 1944 initiated act.

Referring to studies of highway wear on automobiles, Mr. Jones said that 1941 travel on graveled roads in North Dakota cost this state's motorists $3,286,000 more than it would have if the roads had been hard-surfaced. He added that if the state Federal aid system is to be adequately improved, "a minimum of $4,700,000 a year over and above the 1940 and 1941 income must be provided for at least 10 years."

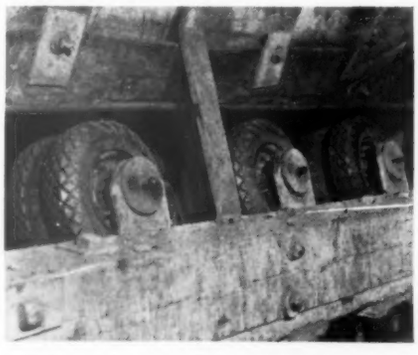
Funds now available to the Louisiana Department of Highways which will become available during the year for operation, highway maintenance and construction work, including both state and Federal funds, total approximately $51,800,410. This figure includes $6,665,764 of regular Federal aid allotted to the state prior to the Federal Highway Act of 1944 and $7,427,157 of Federal funds allotted to the state for the first post-war year, both of which amounts must be matched by state funds in the required ratio. However, since all of the funds available for construction cannot be placed under way during the year 1946, it is estimated that only $24,711,818 of the total available will be used for construction, maintenance and operation during the year and the balance of $27,088,592 will be carried over for future work.

## European Organization Set Up by Chicago Firm

Louis Ware, president of the International Minerals & Chemical Corporation of Chicago, has announced that the firm will establish an overseas sales organization in Europe. G. W. Meyers, sales manager of the phosphate division, sailed on November 14 to tour England, France, Belgium and the Netherlands. He will set up sales outlets in each of these countries and survey markets for phosphate.

## Lone Star Office Building Now Under Construction

The Lone Star Cement Corp. at Nazareth, Pa., is erecting a $25,000 office building on the Nazareth Pike. Vice-president Luther McConnell stated that the sales offices will be moved there from New York as soon as the building is ready for occupancy.



The accompanying illustration shows a 36-inch Goodyear conveyor-belt roadway, cushioned by Goodyear tires, which hauls more than 450 tons of coal, rock and shale per hour from the Locust Coal Company mines at Shenandoah, Pennsylvania. The 4.00 by 8, 6-ply tires, mounted on shafts revolving in bearings, are placed at the dumping point to absorb the shock of falling material.

## Horner Named President Of A.S.C.E. for 1946 Before 93rd Annual Meet

On the eve of the 93rd annual meeting of the American Society of Civil Engineers, Colonel W. N. Carey, its secretary and executive officer, announced that W. W. Horner had been elected president for 1946. The annual meeting, held January 16 to 19 at the Hotel Commodore in New York City, drew an attendance from 64 sectional societies.

Taking office at the New York session, along with Colonel Carey, were vice-presidents Arthur W. Harrington, district engineer with the U. S. Geological Survey at Albany, New York, and J. T. L. McNew, vice-president for engineering of the Agricultural and Mechanical College of Texas.

## A. R. Shiely Re-elected Head of Builders' Group

A. R. Shiely of the J. L. Shiely Company, St. Paul, Minnesota, producers of sand, gravel, crushed stone, and ready-mixed concrete, was re-elected president of the Builder's Exchange of St. Paul at the annual meeting held December 4. Mr. Shiely, now entering his second year as president, served as first vice-president during 1944.

## Plan 20th Annual Exhibit For Chemical Industries

Plans for the 20th Exposition of Chemical Industries indicate February 25 to March 2, 1946, as the official dates. The exposition will again be held in Grand Central Palace in New York City.

This first postwar exposition will include demonstrations and exhibits occupying three full floors and a part of the fourth.

## Home Builders' Exposition Floor Space in Demand

Interest in home building problems, accentuated by acute housing shortages, is illustrated by the wide-spread demands for large exhibit space at the National Association of Home Builders' Exposition, which will be held February 25-28, 1946, at the Stevens Hotel in Chicago.

C. N. Corbet of Zaneville, Ohio, is engaged in building a new $50,000 sand-and-gravel plant in that city.

The Pit and Quarry Directory will show you that a large and steadily-growing percentage of ready-mixed concrete plants are operated by aggregates producers.

## New O.P.A. Price Method In Effect on Materials For Building Industries

A new pricing method to enable producers of specified building materials to ship outside their normal marketing areas into temporary shortage areas has been established by the Office of Price Administration.

Producers who elect to use this method may add the full amount of freight costs to the f.o.b. plant maximum prices of their product. Industrial users of the materials will be required to absorb the amount of the increase. Gypsum, when sold for use as a retarder in the manufacture of cement, is the first to be affected. As the demand for other building material rises in shortage areas, they are to be placed on the list of commodities which may qualify under the new pricing method.

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## U. S. Reclamation Bureau Has $140,000,000 Program

According to an announcement by the U. S. Reclamation Bureau, a $140,000,000 construction program is to be scheduled for 1946. Thirty projects in 17 Western states will be launched in the greatest program of the 43-year-old bureau's history.

Interior Secretary Harold L. Ickes stated that the plans were designed to meet peace-time demands for agricultural and industrial expansion. Work on the 1,000,000-acre Columbia River basin project in Washington, interrupted by the war, will be resumed.

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## Venezuelan Asbestos Mill Nearing Full Capacity

The abestos mill of the Compania Minas de Cemento de Tinaquillo, at Tinaquillo, State of Cojedes, Venezuela, went into production recently with only a few improvements necessary for full capacity operation. Work is proceeding on the construction of a cement-asbestos products factory in Caracas which will use the low-grade fibers. Certain concessions in the States of Miranda and Cojedes are under consideration as possible plant sites.

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## Gypsum Crushing Plant Starts New Industry

New facilities are being installed by the Gypsum Company of California near McKittrick, where the crushing of agricultural gypsum has launched a new industry in this area. One crusher is already in operation, and two more are being built. Shipments will be begun in the near future.

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## Rock Wool Plant Locates In Northeastern Kansas

Tonganoxie, Kansas, is the location chosen by W. C. Thomas of Atchison for his rock wool plant, said to be the first in the state. Operation is due to begin by the middle of February. Only a few rock wool plants are located west of the Mississippi River. Mr. Thomas was formerly engaged in the rock wool business at St. Joseph, Missouri.

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## Penn-Dixie Reorganization And Merger Approved

Plans for recapitalization of the Pennsylvania-Dixie Cement Corporation which involve a merger with the General Cement Corporation were approved by the former's stockholders at a meeting in New York on December 12. (General Cement is a subsidiary of Penn-Dixie.)

Victor N. Roadstrum, chairman, stated that the board of directors planned to make regular dividend payments and estimated that the company may earn $1,500,000 in 1946, with favorable labor conditions, or the equivalent of approximately $2.50 a share on the 604,800 new shares.

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## Canadian Builders Ask Materials Control Group

Representatives of the Canadian building trades industry at the Canadian Construction Association meeting in Winnipeg requested the government to form a committee with broad powers to recommend controls on materials and tax revisions, as a means of expediting home construction. The request received favorable consideration at Ottawa.

The builders expressed the opinion that the government will be forced to restore its restrictions, lifted on January 1, unless industry takes the initiative. Estimates on housing units now needed in Canada vary from 400,000 to 700,000.

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## Colorado Minerals Survey To Appraise Non-Metals

Described as the major post-war project of the Colorado State Mineral Resources Board, the proposed survey of mining possibilities within the state will include an investigation of non-metallic products. Limestone, feldspar and clay deposits, as well as other quarry products, will be carefully appraised by the survey group, which is headed by John W. Vanderwilt.

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## Former A.E.D. Chief Dies at Convention

Hamilton O. Penn, who had retired on January 28 as president of the Associated Equipment Distributors at their annual convention in Chicago, died unexpectedly at the Edgewater Beach Hotel, convention headquarters, on January 30.

Convention delegates numbering about 1,500 were informed of Mr. Penn's death as they witnessed the installation of the new president, F. B. McBath, and other officers and directors. Mr. Penn. who was 51 years of age, resided at Tuckahoe, N. Y., and New Rochelle, N. Y. He was president of the H. O. Penn Machinery Company of New York City; he was also an officer and a director of several other business organizations and institutions.

## Chemical Engineers Hold Annual Symposium—Theme, Particle Size

The 12th annual chemical engineering symposium of the Division of Industrial and Engineering Chemistry was held on December 27, 1945, at the Polytechnic Institute of Brooklyn under the sponsorship of the American Chemical Society. The theme of the meeting—Measurement and Creation of Particle Size—was covered in a series of nine papers.

At the morning session, devoted to consideration of Sub-sieve Measurement of Particle Size, Alphonse Pechukas and F. W. Gage, of the Pittsburgh Plate Glass Company, Columbia Chemical Division, presented the first paper, entitled *Rapid Method for Determining Specific Surface of Fine Particles.* This discussion presented the Lea and Nurse method as readily reproducible, rapid and simple in operation. The second phase of the session, *The Centrifugal Sedimentation Method for Particle Size Distribution,* was discussed by A. E. Jacobsen and W. F. Sullivan of the National Lead Company, Titanium Division. Henry Green of the Interchemical Corporation presented the third paper, *A Two-Dimensional Form of Flocculation,* which took up the problem of what constitutes the ultimate particle. Photographs were shown of a type of flocculate often mistaken for a single particle. *Weight and Shape of Polymer Molecules* was the topic of the fourth study, prepared and delivered by P. M. Doty and H. Mark of the Polytechnic Institute of Brooklyn. Four methods used to determine weight and shape of polymer molecules in solutions of fractionated polymers were outlined. The final dissertation of the morning session, *Particle Size by Spectral Transmission,* was given by Emerson D. Bailey of E. I. du Pont de Nemours & Company.

During the first part of the afternoon session, devoted to the topic of Sieving, A. A. Klein of the Norton Company considered the development of test sieves and described the means of accomplishing comparable sieving from a precision standpoint. The last three papers treated aspects of the general theme Creation of Particle Size, *Grinding on a Job Basis,* by Felix B. Shay of the Foote Mineral Company, stressed the need for better methods of extremely fine grinding and urged close and intelligent supervision for efficient operation. C. E. Berry of E. I. du Pont de Nemours & Company, in discussing *Modern Machines for Size Reduction in the Fine-Size Range,* described high-speed hammer mills and fluid-energy mills now available. The last paper took up *A New Method of Pulverizing and Drying Minerals.* J. I. Yellott of Bituminous Coal Research, Inc., and A. D. Singh of the Institute of Gas Technology presented a new method of pulverizing and simultaneously drying crushed minerals developed by the Institute of Gas Technology. The process has also been used with other materials, including limestone.

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The Granite Rock Company is installing a 1,000-ton Stephens-Adamson primary crushing plant at Watsonville, California. The new plant will serve as a feeder for the company's present setup.

## Delegates Appointed to Midwest Power Meeting At Chicago, April 3-5

Twenty-eight outstanding leaders in the field of power have been appointed delegates to the Midwest Power Conference in Chicago on April 3 to 5 by Conference Director Stanton E. Winston. The conference is sponsored by the Illinois Institute of Technology, in co-operation with several other colleges, universities and engineering societies.

Of special interest to members of the quarrying and concrete industries are the following scheduled addresses: *Centrifugal Compressors*, W. H. Carrier of the Carrier Corporation of Syracuse; *Radiant Heating*, T. N. Adlam of the Sarco Manufacturing Company, Inc., New York; *Effect of Superchargers on Diesel Performance*, Ralph Miller of the Nordberg Manufacturing Company; *The Use of Silicone Insulation*, G. L. Moses of the Westinghouse Electric Corporation.

## U. S. Mines Bureau Bulletin Features Gypsum Output

Published as a separate bulletin by the U. S. Bureau of Mines is a chapter preprint from the 1944 Minerals Yearbook, entitled *Gypsum*. The material, compiled by C. L. Harness and M. G. Downey, contains much information on the post-war outlook for gypsum, domestic production, distribution of sales by uses, foreign trade, world production, and so on. Tables, graphs and charts are included to supplement the text. The bulletin is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for 5 cents a copy.

## Illinois Fluorspar Workers Get 10 Cent Hourly Raise

Fluorspar workers in the Hardin County area of Illinois were awarded a wage increase of 10 cents an hour under an agreement between the Aluminum Ore Company, Fluorspar Division, and Local 12590, District 50, of the United Mine Workers. The increase resulted in the following scale: surface workers, 73 cents per hour; underground common labor, 86 cents; miners, $1.00.

## Gypsum Output Increased In Final Months of 1945

Crude gypsum mined in the United States rose 5 per cent. in the third quarter of 1945 as compared with the same period in 1944, according to the U. S. Bureau of Mines. Output of calcined domestic and imported gypsum was 7 per cent. higher. Construction uses accounted largely for the increases; most other uses declined during the quarter.

The cost of installed gypsum products, now entirely under the control of the Office of Price Administration through Revised Maximum Price Regulation 251, is based on material-and-service costs, and may vary according to area. In view of the general shortage of labor and materials and impending winter, the full effects of the revocation of L-41 will probably be delayed.

On September 14 the Office of Price Administration raised the ceiling price of calcined gypsum "bag goods" in the Eastern seaboard area by $2.40, from a previous ceiling of about $12. The increase may be passed on by resellers.

Imports of crude gypsum were 177,212 short tons in the third quarter, making a total of 272,658 tons for the first nine months of the year. The increase in the latter part of the year is partly seasonal, but was made possible largely through a small increase in available shipping space

## Graham Bros. Building Houses General Offices

The general offices of Graham Brothers, Inc., one of southern California's leading producers of sand, gravel, ready-mixed-concrete and bituminized aggregates, have been moved from the former location at 4731 East 52nd Drive, Los Angeles, to the company's plant at 2000 North Peck Road, El Monte.

A new general office building was constructed in a 30-day period and the transfer was made on schedule November 17, 1945. The new building, insulated throughout and electrically-heated and cooled by built-in ducts, contains a large general office room, private offices for President Paul C. Graham, Vice-Presidents Russell C. Graham and L. I. Johnstone, and other company executives, and a large fireproof vault. A wing on the new building will also house the El Monte plant office and scalehouse, a new Fairbanks 50-ton truck scale being installed at the same time. Despite material shortages and labor scarcities, the erection of the new building went ahead on record schedule, a tribute to the untiring efforts of the company's construction superintendent, Charles Poe.

The land and buildings formerly occupied by the concern in Los Angeles were sold to the Alframine Company, a New York chemical concern, which will utilize them as their new Pacific Coast headquarters and manufacturing plant.

A new automotive-maintenance building 75 by 100 feet in area is shortly to be erected at El Monte to service the large and growing Graham fleet of truck-mixers and other vehicles. Early in 1946 the company expects delivery of several new truck mixers and dump trucks.

The company recently re-opened its "Grahamized" ready-mixed-concrete plant on Cherry Avenue in Long Beach which was closed during the war. Its sand-and-gravel plant at San Juan Capistrano which was busy during the war supplying crusher-run base rock and aggregates to the El Toro Marine Air Station (PIT AND QUARRY, July, 1945, pages 71-72) is now operating as a commercial plant. The El Modeno plant has been revamped to allow the production of large quantities of base rock.

Drilling, blasting, crushing, screening, and electrification are only a few of the many subjects completely covered in the 23 chapters in the Pit and Quarry Handbook.

## Eric Johnston Announces Share-the-Profit Plan On Basis of Point System

Eric A. Johnston, a member of President Truman's labor-management advisory committee and president of the United States Chamber of Commerce, has announced a profit-sharing plan for his employees.

Under the proposed system, the personnel of the Washington Brick & Lime Company of Spokane and Seattle, headed by Mr. Johnston, will receive points based upon annual earnings, years of service, membership on the junior board and other considerations. The cash value of these points is to be determined by dividing the sum to be shared by the total number of points due all employees for the year.

Mr. Johnston described the profit-sharing plan as one intended "to give every man a chance to take a chance and shoot for larger gains." The amount to be shared will be reckoned on 25 per cent. of net trading profits before taxes and dividends.

## British Columbia Cement Co. Plans to Modernize Plant

According to a report from the British Columbia Cement Company, Ltd., this Canadian firm is currently engaged in an extensive remodeling program at its Bamberton plant. A new kiln, a coal grinding system and a change in raw materials are on the list of improvements. It is planned to modernize the plant completely and to increase its capacity materially.

## Chambersburg Stone Co. To Alter Hauling Methods

An extensive revision of its haulage system from quarry to plant is the next step to be taken in the modernization plan of the Chambersburg Stone Company of Chambersburg, Pennsylvania. Two new 3½-cubic-yard Rex mixers on Mack trucks are already in use at the company's ready-mixed concrete plant. Four more such trucks have been ordered.

## Lehigh Mortar Cement Made at Metaline Falls

At the Lehigh Portland Cement Company's plant at Metaline Falls, Washington, a new product, Lehigh mortar cement, is now being made. Described as a substitute for lime mortar, the product requires no slaking and is ready for immediate use. New storage tanks and other equipment have been added to the plant, and initial shipments of mortar cement have begun.

National Silicates, Ltd., of New Toronto, Ontario, contemplates the erection of an additional building at its plant in Etobicoke township, near Toronto. The estimated cost is $34,500.

# WASHINGTON NEWS LETTER

another P and Q exclusive

THE extreme concern of the Administration over the course of domestic economic affairs was evident in the President's recent messages to the nation and to Congress. Just how much Congressional cooperation Mr. Truman's mild get-tough attitude can compel is problematical, in view of the repeated rebuffs he has received at the hands of the legislators in the last few months, particularly in the House. Most observers on Capitol Hill feel that a still more direct appeal to public opinion will be necessary if the Congressional tradition of playing politics with vital economic issues is to be interrupted. The view most widely held is that, regardless of the high stakes involved for the nation, there will be little change in the partisan approach of the present Congress toward even the most serious problems, and that Mr. Truman will have to take his chances that the elections late this year will give him a more responsible and cooperative law-making body. If the Chief Executive goes all the way in carrying his case to the people, he will be faced with a major political dilemma, stemming from the fact that among the principal obstructionists to his program have been members of his own, as well as the opposition, party.

Economic activity since V-J day has been much higher than many government and business economists feared would be the case, and official estimates of business trends have been revised sharply upward. Initially, considerable emphasis was placed on the possibility that the drop from wartime income levels for the bulk of the population might bring about a retrenchment in the rate of consumer spending, and consequently in the volume of business investment and industrial output in general. (This had been the experience in other periods of declining income, such as 1929 and 1937.) At the same time, it was expected that the continued shortage of goods would exert heavy pressure on prices, and that the deflationary tendencies, therefore, would occur in an atmosphere heavily charged with inflationary possibilities.

Enough time has now elapsed since the end of the war to indicate clearly that from a national standpoint the deflationary developments have by and large failed to materialize. This does not mean that large numbers of wage earners have not suffered from curtailment of income or from unemployment, but rather that in spite of these factors consumers have continued to spend at a high level. The flow of consumer spending has been supported and even expanded from two main channels not previously tapped: 1) the liquidation of accumulated savings on the part of some individuals and a decreased rate of saving by others; thus, although on the whole individual savings have continued to increase, the national ratio of savings to current income has been much reduced; 2) the re-entry into the civilian market of well over six million demobilized veterans by the end of January (scheduled to increase to almost ten million by mid-1946) and their expenditures for civilian goods and services of all kinds.

The substantial rise in consumer outlays to an all-time high is in sharp contrast with the decline which had been anticipated. Construction and capital purchases of durable equipment also were higher than expected and the rebuilding of business inventories has been at an unprecedented rate. The net result has been that after reaching a post-war low in October, the short downward trend was reversed and industrial production has been climbing gradually upward. There is now every reason to believe that consumer expenditures and business investment will mount steadily throughout the remainder of this year. Even after allowing for the rapidly falling rate of Federal spending, therefore, Government economists are now predicting that by the end of 1946 the economy should be operating at a level not very much below full employment, i.e., the amount of unemployment at the year-end will be only sightly above the normal "frictional" amount for that level of business activity.

There are two important qualifications to this prediction. The first condition is that strikes in key industries will not be of very long duration. The second is even more basic. A wild price inflation, aggravated by frenzied speculative activity, would bring the boom to a hasty end, just as in 1930. Sufficient controls will be in operation so that it is doubtful that this will occur in 1946 except on a limited scale; nevertheless, the problem will grow and may well be the pivotal factor in determining whether the favorable trends indicated for the year ahead are to be no more than a short-lived development or the beginning of a period of extended prosperity.

Recognition of the crucial nature of this problem has moved the President to urge the prompt extension of price control legislation and of priority and allocation powers. Although strategic retreats may be ordered from time to time, as in the case of steel, the line will not be broken easily. Special attention will be paid to the housing situation where inflationary pressures, due to the almost unlimited demand, are greatest. The most reliable Government estimates at the present time anticipate residential building in 1946 at $2.5 billion, one-third of expenditures for all new construction. Of course, this will meet only a small fraction of the housing demand. The general feeling is that price advances in this field would not necessarily increase production, and there is much concern lest precipitous price jumps choke off a demand which could otherwise sustain production at a high level for a decade or more, and thus negate a future source of stabilization in the economy.

Construction activity is expected to increase at a brisk pace well into 1947 and beyond. The Department of Commerce, for example, estimates that the volume of new construction in 1947 will exceed $12 billion, and that more than three-fourths of the total will be in residential, industrial, and other private buildings. This total compares with $7.5 billion forecast for 1946 and the $4.5 billion actually recorded in 1945, and is not very far below the wartime peak of $14 billion reached in 1942. The demand for building materials is thus expected to expand at a rapid rate for some time to come and, with the pressure on other basic materials accompanying the high level of business and individual consumption, there are strong indications that government controls will tend rather to increase than to diminish until the supply of at least the essential commodities comes more nearly into balance with demand.

# MEN OF THE INDUSTRY

## Charles Boettcher Takes a Bow—Pioneer Producer Still on Job

OFTEN referred to as "the grand-old man from Colorado," Charles Boettcher in 76 successful years of business activity stands out as one of the foremost figures in the cement industry. President and until recently general manager of the Ideal Cement Co. of Denver, Mr. Boettcher is as prominent in the business and financial world as he is in the industry which he pioneered at the turn of the century. Founding the company, which he now heads, in 1902, his achievements in the industry have expanded in step with his company which now operates eight cement plants, two plaster plants, and subsidiaries marketing in 22 states.

At the time the nucleus of the present Ideal Cement Company was founded, activity in the cement industry was confined principally to Europe, with the very few plants in this country attempting to shelter themselves under the reputation already established by the imported product. It was during this era that Mr. Boettcher entered upon a career in an industry which had to be pioneered and developed in order to provide a product so essential to the growth of the nation. Today the cement industry owes much to him for its widespread development and the extensive application of its products. This man, who has realized such achievements from his untiring efforts, at 93 years of age still maintains daily office hours, serving as active president of the company which he has been instrumental in developing to the magnitude that it has attained today.

Born April 8, 1852, in Colleda, Germany, Mr. Boettcher, upon completing a high school education, followed his older brother in migrating to Cheyenne, Wyoming, where the latter operated a hardware store. Within a very few years he started out on his own and established a chain of hardware stores throughout northern Colorado with his headquarters and residence in Ft. Collins. It was here that Mr. Boettcher, at the age of 22, married Miss Fannie A. Cowan, who later bore him two children, Claude and Ruth.

By 1878, Mr. Boettcher had started a prosperous business in Boulder, Colorado, which he later transferred to Leadville in order that he might participate in the rich silver strike there by taking advantage of the demand and high prevailing prices for miners' hardware. About this time his business activities broadened out in the construction of an electric light plant for the city of Leadville and later the construction and operation of such a plant at Salt Lake

Charles Boettcher

City, Utah. Although he moved his family to Denver in 1890, he operated his store in Leadville for many years thereafter.

Hard work and initiative were not without its rewards as he had accumulated a substantial estate in 21 years, and saw fit to make frequent trips to Europe. On one of these trips his attention was drawn to the beet sugar business, and recognizing that the climatic conditions of Germany, where the beet sugar industry flourished, were similar to those of northern Colorado, he built and operated, in 1900, the first sugar plant in the West, at Loveland, Colorado. This venture, successful from the start, has developed into the present Great Western Sugar Company with 22 plants in four western states.

The importing of cement from Europe for the construction of his sugar plant opened another avenue of exploitation for which Mr. Boettcher proved himself ready and capable. Reasoning that a suitable product locally developed might result in tremendous savings in freight alone, he began investigations which led to the development of a limestone deposit on the banks of the Arkansas River some 26 miles west of Pueblo, Colorado. A small plant was built in 1902 from which has grown the present Ideal Cement Company with plants in Colorado, Montana, Utah, Nebraska, Oklahoma, Arkansas and Texas. His maturity in years has not affected his active participation as president of this company which he founded 44 years ago.

Other interests of Mr. Boettcher include banking, investment-banking, and the acquisition of real-estate and business properties, all of which seem natural to such a busy and productive life as his. He started the National Fuse & Powder Company, and with his son, he developed, owned, and operated for many years, the Western Packing Company in Denver. Also, he was instrumental in the financing and operation of the Denver Tramway Company, of which he still remains chairman of the board.

While residing in Leadville during his early career, he bought what was originally intended to be a horse farm in North Park; however, indicating that success stalked him in every venture, this property later developed into one of the largest sheep and cattle ranches in the West, being known as the Big Horn Cattle Company of Codrey, Colorado. Ranching is a hobby with Mr. Boettcher, and he takes a special interest in raising deer, elk, and wild turkeys on his estate west of Denver. He is also a charter member of three clubs, the Denver Club, Denver Athletic Club, and the Denver Country Club.

When he celebrated his eightieth birthday 14 years ago this coming April, he was quoted as saying: "I think ten more years will be enough if we can manage it," later expressing the fear that twenty more years might be too much. His undimmed fortitude has carried him through the first ten years and added additional laurels to a career that will serve as a monument of progress in the cement industry.

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## Aggregates Loadings in Great Lakes Area Decline

Estimated freight-car loadings of gravel, sand and stone in the Great Lakes area during the final quarter of 1945 were placed at 23,145, a decrease of 4.3 per cent. from the corresponding period of 1944, at a meeting of the Great Lakes Regional Advisory Board in Buffalo, New York recently.

# American Aggregates' New Indiana Plant Produces 300 Tons Per Hour

another ON THE SPOT report

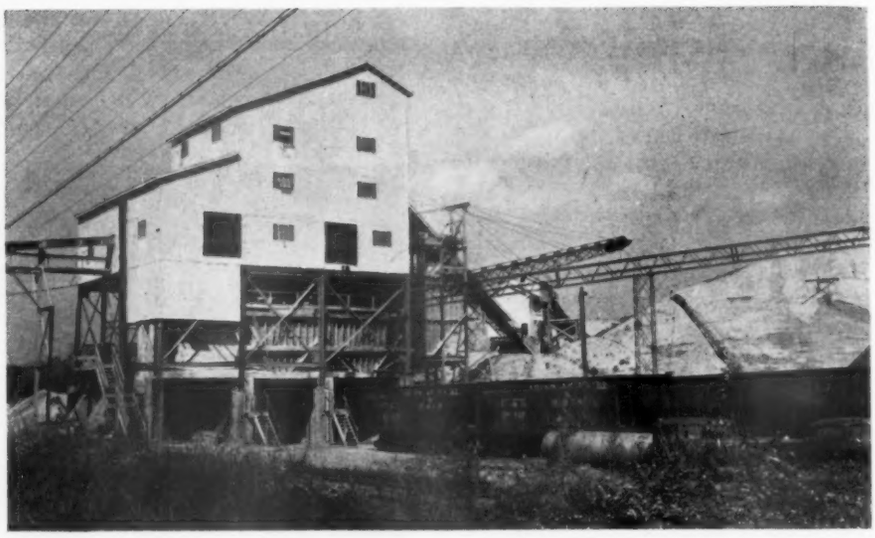
ONE of the few new sizable sand-and-gravel plants to go into operation during the war was that of the American Aggregates Corporation at Richmond, Indiana. It has a capacity of about 300 tons per hour and, according to Fred Lamb, superintendent, 11 different sizes of products can be processed and stored. The glacial deposit on this site has been worked for 24 years and has long been noted for the excellence of its raw material.

Originally built as a straight ballast operation, the old plant, owned and operated by the old Greenville Gravel Company (now the American Aggregates Corporation), underwent numerous improvements during its existence. Eventually, however, it became out-moded and the company, faced with the decision to remodel extensively or build an entirely new plant, chose the latter course. Much of the credit for its design belongs to F. D. Coppock, president, who devoted about a third of his time to it during its design, erection, and initial operation. Steel

Left: Fred Lamb, Superintendent of Richmond plant. Right: Lowell Park, who operates pit at Muncie, Indiana.

and concrete predominate in its construction, much of the steel from the old plant having been salvaged for use in the new structures. The plant is located on the Cincinnati-to-St. Louis branch of the Pennsylvania Road, two miles east of Richmond, Indiana.

The overburden on that part of the deposit now being worked ranges from 2 to 5 feet in depth and is removed by a Bucyrus-Erie 50B Diesel



General view of American Aggregate's Richmond, Indiana, plant.

dragline equipped with a 2¼-cubic-yard bucket, the spoil being overcast or hauled away by dump trucks. Recently a considerable amount of stripping was done under contract, using 16-cubic-yard Tournapulls and tractors. Loading is done by a Bucyrus-Erie 24 electric dragline which handles a 4-cubic-yard Page bucket. This machine, mounted on roll undercarriers, operates on fabricated mats and loads the material into a 90-ton pit hopper which straddles the track and can be moved as the occasion requires. This hopper is identical, except for size, with several others in use at some of the score or more plants operated by the American Aggregates Corporation in the Middle West, several of which have been described in earlier issues of this magazine. It is equipped with air-electric gates which load the 50-ton steel ore cars. These cars are drawn to the plant hopper by a Vulcan 40-ton saddle-tank steam locomotive. A 500-hp. Diesel-electric locomotive will soon take the place of the steam locomotive.

A steel trestle spans the plant hopper, which has a capacity of about 2,000 tons of pit-run material. The hopper and its 100-foot reclaiming tunnel are built of concrete. A Jeffrey electric vibrating feeder puts the material on the first belt-conveyor, which is 30 inches wide and 216 feet long, and carries it to a halfway, or transfer, house which incloses a 15- by 30-inch Buchanan jaw crusher and a scalping vibrating screen. The plus-3-inch gravel is reduced in this primary crusher, the crushed product and screen throughs being deposited on another belt conveyor 30 inches by 175 feet in size, which carries them up to the screening plant.

The initial processing is done by a 60-inch by 26-foot Greenville revolving screen with a 5-foot scrubber section on its receiving end and 1¾- and 2-inch round holes in the overhanging end of the inner jacket. The central portion is made up of 1⅛-inch openings on the inner jacket, ¾-inch on the middle jacket, and ¼-inch mesh on the outer jacket.

The 2-inch oversize rejected at the overhang drops on a short picking belt which conveys it to a chute feeding a 4-foot Nordberg coarse bowl and also a 4-foot Nordberg fine reduction crusher. The 1⅛- to 1¾-inch and the 1¾- to 2-inch material passing the perforations in the overhang of the revolving screen can also be crushed in these crushers but are chuted directly as sized, by-passing the picking belt.

The crushed material is elevated to a 5- by 10-foot Allis-Chalmers double-deck flat screen, designated as the dry stone screen, for the removal of dust and oversize. The upper deck has 1½-inch perforations and the bottom deck 5/6- by 3-inch wire mesh. The products on each deck may be stored as finished gravel in the bins below, top-deck oversize

may be further reduced in the cone crushers. The 1½-inch and smaller crushed material may be passed to an Allis-Chalmers 5- by 10-foot triple-deck screen. This unit makes ¾- to 1½-inch, ¼- to ¾-inch and 1/10- to ¼-inch material. The minus 1/10-inch fines are carried by flume to the sand tanks to make up the requirements of fines in the sand.

The ¾- to 1½-inch and the ¼- to ¾-inch products are usually discharged to storage, the other sizes being either stored or subjected to still finer reduction. Two Greenville 24-inch impact crushers are also used to increase the amount of fines. This finely-crushed material has been in great demand of late for making bituminous-surfacing material, a new hot-mix preparation plant having recently gone into operation on the property. These crushed fines are being carried to open storage by a 24-inch by 70-foot stacker belt.

Returning to the disposition of the other products of the revolving screen, the 1⅛- to ¾-inch gravel may be stored or passed to the Nordberg cone crushers, the ¾- to ¼-inch may be discharged into the bins or sized more completely in a 4- by 8-foot double-deck vibrator designated as the gravel rescreen. The sizes made on this screen, which vary according to demand, are often stored in a separate truck-loading compartment bin alongside the main car-loading bins, a 30-inch by 40-foot belt conveying the material.

Minus-¼-inch sand passing the outer jacket of the revolving screen is flumed to another Simplicity 4- by 8-foot double-deck vibrator with 3/16-inch mesh on the upper deck and Number 8 mesh on the bottom, which is known as the sand screen. The fines passing the bottom deck are washed to a 50-ton Greenville sand-drag which produces masons' sand.

All the crushers and screens in the plant are flexibly arranged, so that production of any particular size or sizes may be stepped up to meet current demands. Individual electric motors drive all the equipment, Gates V-belts being used for transmission except on the disc crusher, which uses flat belts.

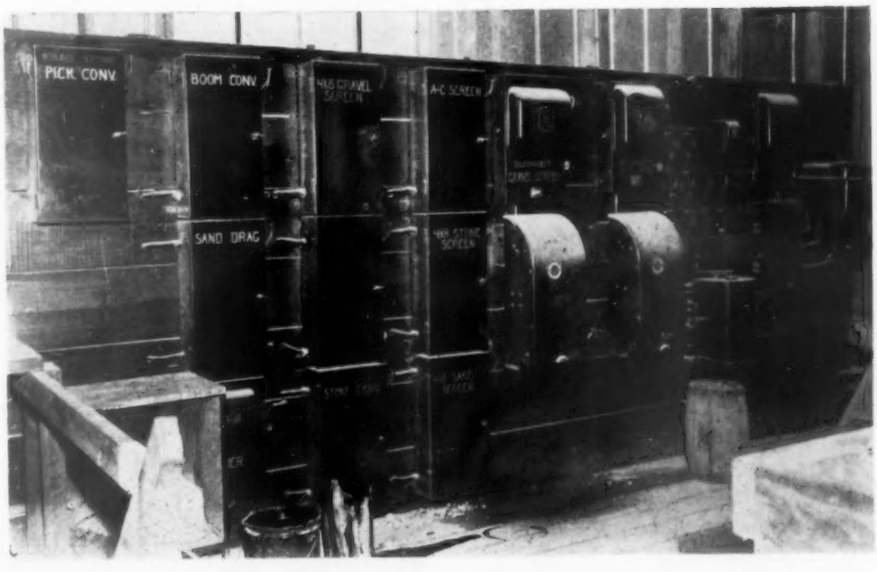
A 35-acre pond in a worked-out portion of the pit furnishes the water for washing, two Amsco Nagle 6-inch centrifugal pumps handling the supply.

The nine bin compartments have a combined storage capacity of 1,500 tons. Railroad cars or trucks are

(*Continued on Page* 80)

A 4-cubic-yard electric dragline loads material into a 90-ton pit hopper which straddles a track.

Large quantities of material are consumed in the operation of a hot-mix bituminizing plant located adjacent to gravel plant.




Each piece of equipment is plainly identified on the electric control board.

# Industry's Major Problems Viewed as National Sand and Gravel Association Holds Thirtieth Annual Convention

another ON THE SPOT report

IN keeping with the current national preoccupation of management, labor and the general public with problems in the field of labor relations a large part of the program of the thirtieth annual convention of the National Sand & Gravel Association, held at the Netherland Plaza Hotel, Cincinnati, January 22 to 24 inclusive, was devoted to a discussion of the difficulties faced by the sand-and-gravel industry in its relations with labor, the public and the federal government. The discussion of these problems was concentrated in the Wednesday afternoon and Thursday morning sessions, when members of the sand-and-gravel association and those of the National Ready Mixed Concrete Association assembled in joint meetings. The work done by both associations in opposing the Walling rulings of March and April, 1945, which broadened the coverage of the Fair Labor Standards Act with respect to these two industries; the likelihood of important reductions being made in Federal taxes in the near future; the principles underlying present price-control activities of the Office of Price Administration; and the function of a public-works program in our national economy were the focal points of the discussions dealing with the relations of these industries with government. The importance of a national program for labor relations was ably and fully treated by V. P. Ahearn, executive secretary of the two associations, who presented, at one of the sessions of the National Ready Mixed Concrete Association's convention held in the same week, a comprehensive discussion of collective-bargaining problems in that industry.

R. N. Coolidge, Cumberland River Sand Co., Nashville, new president of the National Sand and Gravel Association.

Because of the fact that the programs of the two associations overlapped and to avoid repetition in the reports of their sessions presented in this issue, the discussions which took place at the joint sessions on Wednesday afternoon and Thursday morning will be reported here, while the sessions arranged specifically for the National Ready Mixed Concrete Association's members will be reported in the pages of THE CONCRETE MANUFACTURER section.

Left to right: V. P. Ahearn, N.S.G.A. and N.R.M.C.A. executive secretary; T. E. Popplewell, Fort Worth Sand & Gravel Co., Ft. Worth, Tex., new vice-president of N.S.G.A.; H. F. G. Pelsue, Metropolitan Sand & Gravel Co., Port Washington, N. Y.; Stanton Walker, Director of Engineering.

**Board Meeting** With President Robert Mitchell (Consolidated Rock Products Company) presiding, the board of directors met on January 21. After Executive Secretary Ahearn explained the program arrangements, the board gave consideration to the problem of when the association's 1947 convention should be held and in what years an equipment exhibit should be provided by members of the Manufacturers' Division. Theodore Aulman (Eagle Iron Works), chairman of the division, presented the views of the equipment makers with respect to both the holding of an exhibition in alternate years and the years in which it should be held. He said that they favored the every-other-year plan in the even-numbered years beginning in 1948 but would be willing to hold a machinery show in 1947, if that should be found necessary.

Executive Secretary Ahearn reviewed briefly the history of the action taken by the association in an effort to have sand and gravel removed from price control and told of the rejection of the plea by the Office of Price Administration. He described the O.P.A.'s policy with respect to the determination of prices —a policy dealt with by William L. Pringle of the O.P.A. and reported elsewhere in this article. Mr. Ahearn said that producers' applications for price determinations with respect to new products or the products of new plants had been handled intelligently and fairly by the O.P.A. in Washington.

Mr. Ahearn said, in speaking of delivered prices, that if, in March, 1942, a producer sold exclusively on a delivered-price basis, without showing separately the plant and transportation elements of the total invoice, he is required to absorb any increase in transportation costs that may have become effective since. If all a producer's sales made in

March, 1942, were based on plant prices, he may pass on to his customer increases in transportation costs. If in the first example cited the bills showed a breakdown of the total price into plant price and transportation cost, increases in transportation costs can be passed on to the customer.

Only ready-mixed-concrete manufacturers, according to Mr. Ahearn, have been permitted to pass on to their customers the cement price increases which the O.P.A. has granted to the makers of cement.

Stanton Walker, the association's director of engineering, spoke about the organization's pleasant and fruitful relations with the University of Maryland and suggested a plan for short courses in laboratory work there which was adopted by the board. Such courses would run from one to two weeks and could be made available to from 8 to 25 persons, dependent on the housing situation, the timing of the course, and other factors. All the out-of-pocket expenses incurred by the men taking the courses would be paid by the companies employing them.

The board accepted another of Mr. Walker's suggestions and appointed Fred Bartel, who has done considerable laboratory work under his direction, as Assistant Director of Engineering.

Mr. Walker also suggested the appointment of two men instead of one man as research fellows at the University of Maryland so that the engineering staff could concentrate on more fields of research. The board approved.

Front row (left to right): James Flannery, Jr., P. Flannery & Son, E. St. Louis, Ill.; J. H. Heintz, C. S. Johnson Co., Champaign, Ill.; George Herbst, Jr., Missouri River Sand Co., St. Louis; W. E. Pugsley, Concrete Transport Mixer Co., St. Louis; Harry F. Thomson, General Material Co., St. Louis; R. J. Wore, Wore Brothers Construction Co., E. St. Louis, Ill. Middle row (left to right): Edgar S. Albrecht, Missouri-Illinois Material Co., St. Louis; C. J. Frein, Fred Schmitt Material Co., St. Louis; Otto S. Conrades, St. Louis Material & Supply Co., St. Louis; B. H. Boedeker, Missouri Portland Cement Co., St. Louis; M. B. Dodds, Missouri Portland Cement Co., St. Louis; Frank Whitman, Universal Atlas Cement Co. Back row (left to right): John J. Yoch, Belleville, Ill.; L. O. Eversman, Missouri-Illinois Material Co., St. Louis; Clyde J. Denton, Missouri-Illinois Material Co., St. Louis; Pete Layden, Universal Atlas Cement Co.

Mr. Walker said that the University of Maryland had approved a $5,500,000 program for engineering, which is now in the planning stage and will include one new building to house the Civil Engineering Department.

Left to right: Grace M. Sharp of the National Sand & Gravel Association and her assistants, Mrs. B. D. Thomas, Mary O'Donnell, and Catherine Van Niman.

In opening the first, Tuesday morning, session V. P. Ahearn, executive secretary of the association, outlined the prospects for the 1947 convention. This, he said, will be held in Los Angeles some time late in February or early in March. There will probably be no exhibits until 1948 and thereafter only every second year. The 1948 date and place have not yet been determined.

**Address of President** Robert Mitchell, Consolidated Rock Products, Los Angeles, retiring president, opened his address by introducing to the audience seven past presidents: V. O. Johnston, Alex W. Dann, Robert J. Potts, H. V. Owens, Alexander Foster, Jr., J. Rutledge Hill, and Otto S. Conrades.

Mr. Mitchell said that the association is successful and solvent, with the membership the highest in its history. He also said that this association does more than most others for its industry and modestly gave most of the credit to V. P. Ahearn, Stanton Walker, director of engineering, and their staff. He stressed the advantages to producers of joining the association, or at least local associations in order to obtain the full benefits of such leadership, and cited the help given the newly-formed Los Angeles Sand & Gravel Producers Association. It later developed that California now also leads all other states in membership in the national association. He also stressed the logical close relationship between the Association and the National Ready Mixed Concrete Association.

In closing Mr. Mitchell said that the employment of veterans and their rehabilitation is a local function and that this time we must

see that there are jobs for all who want them. Employers, he said, must assume a moral as well as a legal responsibility and must rehire all former employees who want to come back. The real problem, he said, lies in the many veterans who had never worked before and each producer must work out his own problems and assume his own responsibilities toward these men.

**Report of Secretary** Executive Secretary Ahearn in his annual report pointed out that he had been able to obtain a government ruling that the 3 per cent. transportation tax does not apply when sand and gravel are sold to a government agency. The owner-driver problem, he said, is a difficult one but government opinion is veering toward regarding the owner-driver as a contractor rather than an employee and not subject to the various taxes. The O.P.A., however, said Mr. Ahearn, regards the 3 per cent. tax as a part of the delivery cost and to be absorbed by the producer. All other taxes he can add to his cost.

In discussing the association's safety program Mr. Ahearn mentioned the fact that, in the 1944 contest, the Consolidated Rock Products Corporation's Orange, Cal., plant was first in the large-plant group and that the Fort Worth Sand & Gravel Company's Quigley, Texas plant won in the small-plant group. The awards were accepted by Robert Mitchell and T. E. Popplewell for their respective companies. Mr. Ahearn stressed the fact that both the accident-frequency and -severity rates were down in 1944 and pointed out what this means to employers not only in direct cost but in many other ways as well. He urged all members not already enrolled to do so.

In commenting on the demise of the W.P.B. Mr. Ahearn said that the industry owes much to the men who headed the mining division. Its successor, the C.P.A., has a reconversion job to do in seeing that those who need equipment most get it first. This industry, he said, does not enjoy the priority it had during the war and the equipment problem as a result is greater. Instead of an AA rating the industry now gets CC but can obtain an emergency AAA rating if a plant burns down, is unable to operate, is supplying a vital hospital or other job, etc. Even in the veterans' housing priorities, he said, sand and gravel does not enjoy the HH rating given many other building materials.

According to Mr. Ahearn the War Manpower Commission never regarded the industry as important so its demise is not mourned. The draft boards, however, treated the industry fairly on deferments.

**Labor Relations** In discussing labor relations Mr. Ahearn advised against a closed shop as this lets the labor union pick and up-grade employees and lowers morale. The industry, he said, should protect itself by upgrading especially the younger employees wherever possible. He strongly advised the

Rolland E. Gilley, Diethers, Ltd., Vancouver, B. C., Canada.

producers to get the association's advice before signing any collective-bargaining contract as there is no standard contract and a producer should know what is being done in other areas before irrevocably committing himself. The association, he said, can put this information in a producer's hands within 24 hours.

The Wagner Act, said Mr. Ahearn, leaves little choice in signing a contract but some producers have needlessly signed some very bad contracts. Some, he said, have lost all right to discipline their employees.

**Wage Rates** According to Mr. Ahearn some of the functions of the War Labor Board were taken over by the wage stabilization board which rules guiding the lowering of wage rates, now illegal, under certain conditions. It also controls wage increases if accompanied by higher prices. He said that while individual wage rates in the sand-and-gravel industry are slightly lower than those in the construction industry there are many compensating advantages such as permanent employment, paid vacations, etc. In Mr. Ahearn's opinion, however, the wage rates paid are above the average in industry and as a result the manpower problem is not serious.

Mr. Ahearn also commented on the new Walling ruling which wipes out the distinctions between interstate and intrastate business and the Gwynne Bill which the unions will probably not permit to pass. He thinks a 55-cent minimum wage rate will soon be adopted with a later increase to 65 cents.

In discussing prices Mr. Ahearn emphasized that the industry is not now required to post prices with the O.P.A. or any other body. Area price relief is, in his opinion, the only practical method. He also said that William L. Pringle, Building Materials Branch, O.P.A. who spoke later in the convention, is always ready to advise and help the Association on the price problems of producers. Mr. Ahearn also said that price controls on building materials will probably last as long as rent control—at least until January 1, 1947, and possibly until July 1 of that year. In closing he expressed his confidence in the future of the industry.

**Engineering Report** Stanton Walker, Director of Engineering, then presented his annual report which briefly and informally described the activities during 1945 and plans for 1946. He stressed the fact that the prime objective of the Association's engineering activities is to be an authoritative source of information on industry problems. Mr. Walker also pointed out that the early return of Fred F. Bartel from the army as Assistant Director of Engineering will make it possible to catch up on much work that the wartime shortage of help had caused to be laid aside.

In discussing the 1945 program Mr. Walker commented on the highly-satisfactory arrangement with the University of Maryland and the building program being planned there which will provide the Association with even better laboratory facilities than it now has. He also mentioned the combining of the Association's research facilities with those of the National Ready Mixed Concrete Association which resulted in the addition to the staff of Delmar L. Bloem as Associate Research Engineer to do work in the ready-mixed concrete field.

**Tests Made in 1945** Mr. Walker then reported on some of the 15 separate series of tests made during the year and which do not include the 9 also conducted for the concrete association. These tests involved about 600 concrete specimens, requiring about 10,000 determinations and more than 50,000 handlings, a respectable accomplishment for a small staff. He then commented on the large stake the industry has in the problem of concrete durability and the large proportion of the work which has been devoted to freezing and thawing. Bituminous mixtures also received much attention.

Mr. Walker then listed the 15 separate series of tests made in 1945 in order to give the members an idea of their scope. They are:

Series 39A—*Effect of Sand on Durability of Concrete and Mortar* (Involves freezing and thawing tests of mortars made with 14 different sands.)

Series 56—*Effect of Shale and Soft Particles in Gravel on Resistance of Concrete to Freezing and Thawing* (Various percentages of shale and soft stone added to hand-picked gravel.).

Series 57—*Freezing and Thawing Tests of Concrete Made with Crushed Stone.*

Series 58—*Freezing and Thawing Tests of Concrete Made with Air-Cooled Blast Furnace Slag.*

Series 62—*Concrete Making Properties of Gravels from Southern California.* (Involved determinations of compressive and flexural strength and resistance to freezing and thawing of concrete made with 5 different gravels.)

Series 65—*Effect of Degree of Saturation of Coarse Aggregate on Resistance of Concrete to Freezing and Thawing.*

Series 67—*Effect of Moisture Content of Concrete on Resistance to Freezing and Thawing.*

Series 68—*Collection Samples for PRA Particle Study.*

Series 69—*Freezing and Thawing Tests of Plastic Mortars.* (Investigation of two sands proposed for use in an important structure.)

Series 70—*Freezing and Thawing Tests of Concrete Made with Different Gravels.* (Concrete made with 17 different gravels collected in a study of soft particles being conducted by the Public Roads Administration.)

Series 71—*Flexure and Compression Tests of Virginia Gravels.* (Tests made in behalf of a member company.)

Series 75—*Flexure Tests of Concrete with Gravel and Slag from Michigan* (Tests made in behalf of a member company. Involves 3 different cement factors and determination of compressive and flexural strengths.)

Series 76—*Freezing and Thawing Tests of Concrete Made with Ohio Gravels.* (Preliminary investigation of a gravel involved in a concrete failure.)

Series 77—*Control Tests of Cement.* (Tests of resistance to freezing and thawing in plastic mortar made with each lot of cement received in laboratory.)

Series 80—*Effect of Entrained Air on Resistance to Freezing and Thawing of Concrete Made with Chert Gravel.*

In commenting on the significance of the durability studies Mr. Walker pointed out the incontrovertible finding that the moisture content of the concrete is the principal criterion of its ability to resist such weathering action. Any concrete, he said, will probably fail if allowed to absorb enough water and these tests support earlier data pointing to this same conclusion. These results, he said, offer impressive evidence of the necessity for keeping as much water away from concrete as possible. Other findings, said Mr. Walker, show that the use of richer mixes does not necessarily add to the ability of the concrete to resist freezing and thawing.

Mr. Walker then mentioned the fact that, for the first time, Connecticut highway specifications now provide for the use of gravel in concrete pavement construction, leaving only one state which does not now make such provision.

**Program for 1946** The work planned for 1946 will include studies of the resistance to freezing and thawing of concrete made

**BY a vote of two to one in favor of the employer the United States Circuit Court of Appeals for the Tenth Circuit has reversed the decision of the Federal District Court in the E. C. Schroeder Company case. The lower court had upheld the ruling known as A-14, issued in March, 1945, by L. Metcalfe Walling, Administrator, Wage and Hour and Public Contracts Divisions, United States Department of Labor. As a result of the decision the ruling will not be enforced in the Tenth Circuit.**

**The A-14 ruling brought within the coverage of the Fair Labor Standards Act all work done in producing materials for what it termed "interstate facilities", such as highways, railways, etc., and is of great importance to the aggregate (sand-and-gravel and crushed-stone) and ready-mixed-concrete industries as well as others. It laid open to suit for back pay hundreds of producers who do not ship their products across state lines and who, for that reason, had considered themselves as not covered by the act.**

**It is not known whether Mr. Walling will take an appeal to the United States Supreme Court immediately or whether he will await the decisions of courts in other districts.**

Left to right: Clark M. Young, Hendrick Mfg. Co.; B. G. Dann, Hendrick Mfg. Co.; J. H. Law, Western Indiana Gravel Co., Lafayette; W. B. Stoddard, Hendrick Mfg. Co.

with sands failing to meet conventional specifications for soundness. A comprehensive study of the effect of sand grading on the properties of concrete will also be made. More investigations on the effect of air-entrainment will be undertaken.

**Laboratory Short Course** Mr. Walker then brought up again the desirability of providing for a laboratory short course for producers on specifications and test methods for mineral aggregates. The University of Maryland, he said, is willing to cooperate by making available the necessary classroom and laboratory facilities and the Association's Board has also approved the plan. Groups of from 8 to 30 can be handled and further information on enrollment, etc., will be provided members within 60 days.

**Handbook** The project of publishing a comprehensive handbook on sand and gravel for engineers was mentioned by Mr. Walker and work on it will start at once. It will summarize all the important information available in such a way that only infrequent revision will be necessary.

**Other Activities** In closing Mr. Walker again pointed out the importance to the industry of representation on the many committees and associations which has always formed a major activity of the engineering division. Other important activities were also mentioned, all of which point at the single objective of making it possible for the Association to render a useful service to the producer and user of sand and gravel.

**Car Supply in 1946** *Car Supply in 1946* was the subject of a talk by W. E. Callahan, Manager Open Car Section, Car Service Division, Association of American Railroads. Mr. Callahan said that the slump after V-J Day brought the 1945 freight volume down to 8 per cent. below the 1944 record but that the demand for box-cars and hopper cars continues at a high level. He also mentioned the forecast of the Shippers Advisory Board (usually very accurate) that the demand for cars in the first quarter of 1946 would be smaller than that in the same period of 1945. The demand by the cement and aggregates industries, he said, is expected to increase and in 1946 should approach the 1941 level.

**Ballast Research** At the Tuesday afternoon meeting of the National Sand & Gravel Association, E. K. Davison served as presiding officer. The first speaker introduced by Mr. Davison was G. M. Magee, Research Engineer for the American Association of Railroads, whose subject was *Railroad Research in Roadway and Ballast*. Mr. Magee explained that in the past, development of the types of ballast and their application has been the result of the trial-and-error method which in his opinion was not without its merits. Construction cost, properties of ballast materials, and availability were factors affecting the selection of ballast materials. He went on to say that even though availability of materials is very important, more careful consideration is given to the physical properties of materials to be used for ballast.

Under the direction of Dr. A. N. Talbot, the A.R.E.A. Committee on Stresses in Railroad Track made the first scientific approach towards determining the action of ballast in track. This approach led to the determining of the elasticity of track, ballast, and roadway construction and design. The modulus of elasticity of rail support was designated as *mu* and used for calculations in the experiments on rail support. It was found that the degree of elasticity would vary with the degree of solidification, depth, and type of ballast used in a roadbed. Tests proved that, with increased depth of ballast, bearing pressure on subgrade decreased and a more uniform distribution of pressure was obtained if the ballast depth approached the center-to-center spacing of the ties. This was true for tests made with sand, pebble, or crushed stone ballast.

Desirable properties for ballast as listed by Mr. Magee are: freedom of drainage, resistance to tie movement, resistance to abrasion and disintegration, ease of working, resistance to vegetation growth, freedom from dust, and availability at low cost. The specifications of the A.R.E.A. for prepared stone, slag, and gravel, include provisions relating to these properties. In order to stabilize the subgrade supporting the ballast, various methods of grouting have proved successful. When water pockets develop in areas of crushed stone or gravel ballast, cement grout is pumped into the ballast until all the water is forced out and the voids filled with grout. Another method of grouting is to force grout into the ballast where it will form a layer either in the ballast or between ballast and subgrade.

A more recent development in grouting described by Mr. Magee is the application of asphalt to crushed ballast. In this method, waterproofing asphalt is sprayed on the roadway to a penetration depth of 4 inches. He went on to say that initial cost is not excessive and that one such installation has given 2½ years of successful service with the minimum of maintenance. In concluding, Mr. Magee predicted the demand for ballast material in 1946 would be about the same as in 1945, but that future demands would increase to bring up to date and put into shape the roadways which received little or no repairs or improvement from 1930 to 1940.

**Bituminized Aggregates** The next speaker was F. M. Williams, engineer, Bituminous Concrete Section, Ohio State Highway Testing and Research Laboratory, Ohio State University. Mr. Williams presented a paper on *Ohio State Highway Department Practices in the Use of Gravel in Bituminous Mixtures*. He explained that his department classifies bituminous mixtures as plant-mixed or mixed-in-place. Included as plant mixtures are: bituminous premixed surface course; asphaltic concrete surface course, hot-mixed, hot-laid asphaltic surface course; cold-mixed, cold-laid asphaltic concrete surface course; cold-mixed, cold-laid tar concrete surface course; tar concrete surface course and oil aggregate surface course. The mixed-in-place items are bituminous surface treatment, bituminous road mix surface and bituminous macadam surface course (penetration method). The use of gravel is permitted under all these items.

Mr. Williams reported that in 1930 his department purchased a total of 50,000 tons of all types of concrete and that from 1930 to 1945, 7,500,000 tons of plant-mixed bituminous concrete was used with approximately 1,000,000 tons being used in each of the past 4 years. Greater tonnages of plant-mixed items were used in recent years as compared to mixed-in-place items. The amount of plant-mixed bituminous concrete containing gravel course aggregate varied from 1 to 66 per cent. of the total yearly tonnage, and that which contained natural sand varied from 25 to 84 per cent. of the total yearly tonnage.

In discussing the size specifications of coarse aggregate. Mr. Williams stated that at present three surface

course sizes are used. These sizes range from ¾ inch to No. 8 sieve, with 1 to ⅜ inch and 1½ to 3/16 inch binder courses specified. A 2- to ⅜-inch size is specified for base

Left to right: Ralph Hunt, Screen Equipment Co.; J. R. Thoenen, U. S. Bureau of Mines; R. P. Holderbaum, Stedmans Foundry & Machine Works.

mixtures. From 1 to 3 coarse aggregate sizes in combination with a fine aggregate may be required for a project on base widening and resurfacing or on new construction, but a project of resurfacing only would require from 1 to 2 coarse aggregate sizes.

The speaker explained that silicious gravel is difficult to cast and that bituminous films strip off easily in the presence of water even though its wearing characteristics are desirable. According to Mr. Williams the current and future developments of chemical additives as anti-stripping agents may make it possible to successfully use hydrophilic gravels both in plant and road mixes. One small application of such treated gravel has been made and found to be satisfactory in the short time it has been in service. In his closing statement he revealed that a bituminous-mix program was the major factor in the maintenance of Ohio's highways during the war years and that gravel and natural sand were the main factors in the execution of this program.

**Concrete Durability** *Durability of Concrete in Service* was the subject of an address given by F. H. Jackson, Principal Engineer of Tests, Public Roads Administration. Picture slides were used by Mr. Jackson to illustrate what he meant by certain classifications of deterioration in concrete. He defined durability as that property of concrete which resists the destructive forces caused by the following: natural weathering, such as freezing and thawing, heating and cooling, and wetting and drying, chemical attacks from the outside, and expansion caused by elements within the concrete.

Inspections and studies made by Mr. Jackson on bridges and other concrete structures in Wyoming, Oregon, Washington, and California indicate that the concrete which has been used since 1930 is more susceptible to all forms of deterioration than is that used prior to 1930. Explaining that a thorough study of concrete durability has not been made of the entire United States, he did say that reports indicate that this condition of deterioration may be prevalent in all localities as it is in the west.

Mr. Jackson warned his listeners that as producers they should be concerned about the poor durability of concrete used in the past 15 years, saying that if something is not done soon to rectify this condition, the use of concrete in building and construction will decrease due to the substitution of other materials of more durable characteristics.

In many of the specimens studied by him, deterioration was believed to be due to any one of the three mentioned causes or a combination of them. Further stressing the seriousness of this condition, he admitted that he could offer no absolute remedy to give concrete of today the same durable qualities as that used in the years prior to 1930.

**Construction Revival** The afternoon session on Wednesday, January 23, with Robert J. Potts presiding, was a joint meeting of the National Sand & Gravel Association and the National Ready Mixed Concrete Association. The opening address, an analysis of the construction picture in 1946, was presented by Thomas S. Holden, president of F. W. Dodge Corporation.

"Construction revival," said Mr. Holden, "has thus far proceeded at a highly satisfactory rate. There was no let-down in activity after V-E day, no let-down after V-J day. In every single month of 1945, after January, the dollar volume of contracts exceeded by a quite considerable margin the volume of the corresponding month of 1944.

"Curtailment of war construction and drastic reduction of public construction volume was accompanied by an upsurge of private contract-letting, resulting in a 37-states contract total for the year of $3,300,000,000, compared with $1,994,999,999 for the year 1944. This was an increase of 65 per cent., the largest year-to-year percentage increase on record. In addition to this upsurge of new construction, the current unrecorded volume of deferred maintenance and repair work is without doubt enormous.

"Last year's rapid upsurge of private building and engineering work amply vindicated the view, widely expressed during the past two years and accepted by Congress, that no forced-draught public works program would be needed. While the dollar volume of public construction contracts declined 9 per cent. between 1944 and 1945, private construction contracts increased 255 per cent.

"In the entire year 1944, private construction contracts accounted for 28 per cent. of the dollar total; in the first half of 1945, 39 per cent.; in the second half of 1945, 78 per cent. Extra stimulation of public works at such a time was not only unnecessary, but would have actually added more confusion to an already confused market situation.

"While the industry's performance to date and its future prospect are highly satisfactory in the respects thus far reviewed, we are of necessity making only gradual progress in meeting the construction needs of the country, notably with respect to housing, in which field shortages are general and distress situations are numerous.

"Relative speeds of construction revival are shown in the following 1945 figures: Non-residential building contracts increased 105 per cent. in dollar volume over 1944. Resi-

Left to right: Miss Hazel Darnell, manager, Acme Ready Mix, Rockford, Ill.; Mrs. M. B. Yager, president, River Sand & Gravel Co., Owensboro, Ky.; Mrs. W. L. Delker, secretary and treasurer, River Sand & Gravel Co., Owensboro, Ky.

dential building contracts increased 62 per cent. in dollar volume over 1944. The dollar volume of non-residential building was more than three times the dollar volume of residential building.

"The greater revival speed of non-

residential building resulted from at least four significant factors:

1. In midsummer 1945 the War Production Board granted priorities to industrial plants for reconversion and expansion, and L-41 restrictions were released for industrial plant construction a month prior to the general removal of L-41. As a result, more than half the 1945 dollar volume of non-residential contracts was for factory buildings.

2. Non-residential buildings of the larger urban types, most of which are of fireproof or fire-resistant construction, are less dependent than houses on supplies of such highly critical materials as lumber, brick and cast-iron soil pipe.

3. The O.P.A. has thus far failed to exempt new rental housing from rent ceilings, thus maintaining for apartment buildings and other rental housing a special handicap not applicable to any other class of building.

4. The continued threat of price ceilings on houses to be built for sale has, according to spokesmen for the home-builders, retarded house-building activity.

"Opinions differ as to whether the measures recently adopted by the Government to stimulate house-building activity will have any large effect. Presumably priorities on materials should tend to increase residential building over the amount that would otherwise be built in 1946. Since such measures do not of themselves increase the total of available materials and manpower, residential building increases so effected would be at the expense of corresponding reduction in non-residential building. By its persistent refusal to exempt new rental housing entirely from rent ceilings O.P.A. neglects one quite important measure that would afford some relief of the shortage situation, particularly in large metropolitan centers.

"The progress that has been made in construction revival is most gratifying in view of existing confusion in the general economy and in the construction market itself.

"The industry has been able to make headway in spite of existing conditions, largely because all of the current confusions and transition problems were fully anticipated. All of them had their parallels in the period that followed World War I.

"Then, as now, construction costs had risen considerably, were quite unsettled, and were destined to rise further. There was a difference, in that the wartime rise was considerably less this time than in the earlier period.

"Then, as now, many people threatened to abandon their projects or to postpone them until costs would drop. Again there has been a difference in degree; the other time the buyers' strike delayed the upturn until five months after the Armistice, while this time activity has been continually increasing.

"Then, as now, there were serious labor troubles and many strikes and work-stoppages throughout industry. In certain phases, the labor situation is probably worse this time than before. Generally speaking labor troubles have thus far been much more serious and widespread in key manufacturing industries, including some producers of construction materials, than in construction.

"In short, present confusion in the construction market is entirely normal for the period immediately following a total war. Existence of such conditions is not a proper cause for worry, if progress, however gradual, is being made in overcoming transition problems. I think there has been progress on a number of fronts thus far; but the progress that has been made can be easily nullified if we have prolonged work-stoppages in key manufacturing industries.

"In view of the overwhelming demand that exists for all kinds of buildings and engineering structures, the amount of work that can be started in 1946 is almost entirely a question of the volume that can be sustained by available materials and manpower. The Dodge estimate is for a 50 per cent. increase in total dollar volume of contracts over 1945. This would mean a 37-states contract total of 4¾ to 5 billion dollars. If there were any assurance of early settlement of current key-industry strikes, we could probably count on mounting contract volume throughout the year."

Mr. Holden recalled that after World War I an inflation crisis came 18 months after the armistice, and that following a spectacular rise in prices there was a drastic deflation accompanied by a severe decline in construction activity. Price controls have helped materially, he said, to curb inflation this time, but the one potent weapon against inflation is production.

In speaking of price and cost indices, Mr. Holden quoted the following figures:

"In October, 1945, wholesale prices of all commodities were 37 per cent. over the 1939 average. Other increases over 1939 were: building materials generally, 31 per cent.; brick and tile, 36 per cent.; cement, 9½ per cent.; lumber, 67 per cent.; paint and paint materials, 30 per cent.; iron and steel, 4 per cent.; non-ferrous metals, 10 per cent.; plumbing and heating, 20 per cent.

"In December 1945, construction cost of single-family houses had risen 40 per cent. over 1939; the cost of fire-resistant and fireproof construction was up about 27 per cent.; heavy construction was up about 31 per cent. These figures are based upon published index numbers, not upon bid prices of jobs, which are apt at a time like this to run higher than the index numbers would indicate."

According to Mr. Holden, construction at present holds out a sound prospect of progress. However, he warned, the present strike situation, if prolonged, can stop the flow of many essential material and equipment items to market.

**Public Works** The next speaker was Baird Snyder, deputy administrator of the Federal Works Agency, who discussed the public works program in its relationship to the overall construction picture.

"It is obvious," said Mr. Snyder, "that we are not going to be able to level the peaks or fill the valleys unless we plan. This does not mean that we can dictate to private industry when, how, or where it shall build. But that part of construction represented by public works—normally a full third of all construction volume—is subject to control to a very considerable extent. This is not my own opinion, alone, but that of the Public Works Construction Advisory Committee, set up by the Construction Industry to advise General Fleming in the Federal Works Agency and to give us its best judgment in all matters relating to public works. It represents outstanding men in twelve private organizations engaged in planning, design, construction or the operation of public works.

"This non-partisan, disinterested board reported late in November that 'substantial good can result from a well-organized program for increasing the volume of construction during a period of depression by advancing the timing of sound public works projects that have been fully planned for ultimate construction although the immediate need for them may not be imperative.'

"That is a rather conservative statement. I would be inclined to say that not merely 'substantial good' can result from the proper timing of public works projects, but that a

whale of a lot of good in terms of steadier employment and a healthier construction industry would result.

"At any rate, the latter part of the statement, which speaks of the 'timing of sound public works projects that have been fully planned for ultimate construction . . .' needs to be emphasized. What many people, who look upon public works construction as a panacea for some of our economic ills, tend to forget is the vital importance of advanced planning."

Pointing out that construction normally accounts for about 10 per cent. of the national income and that of all construction a third normally is public, Mr. Snyder stated that public works should amount to $5,000,000,000 annually to assure full employment.

"Public and private construction," the speaker said, "do not compete with each other; rather, they supplement and complement each other. Many kinds of private work cannot be carried out until some type of public work has been undertaken."

Mr. Snyder urged the creation of a backlog of public works plans with a view to withholding such projects so far as possible, when building is sufficient to utilize the human and material resources of the construction industry, and to release them when private construction shows signs of declining.

"Only as government plans wisely," he concluded, "will government be able to take its place in the procession which we hope to see moving toward the promised land of peace and plenty—including plenty of jobs."

Mr. Snyder's talk was followed by a discussion period, led by T. H. Cutler, Kentucky State Highway Engineer, and Perry T. Ford, Director Department of Highways, Columbus, Ohio.

**Kentucky Plans** Mr. Cutler reported on the status of plans for highway construction in Kentucky, revealing that 230 projects have been completely planned and are ready to go. The state hopes to get $20,000,000 worth of projects under contract during 1946, and plans ultimately to have a large reservoir of planned work to release as needed.

**Ohio Plans** Mr. Ford reported that in his state $40,000,000 worth of highway projects must be placed under contract by mid-1947, and that the state is now developing a 6-year program. He pointed out one often-overlooked advantage of long range planning—the opportunity afforded to aggregates producers to determine where and when to develop properties.

**Labor Relations** V. P. Ahearn, executive secretary of the Association, was the last speaker to address the joint session. His subject was *Development of a National Program for Labor Relations.* He reviewed the dark labor situation which confronts industry and the country in general today, and outlined some of the efforts that have been made to get a peaceful adjustment of the problem rather than to let the present chaos develop.

Among the many factors which contributed to the rolling snowball of trouble was the early revocation of the no-strike pledge, an action that took place immediately after V-J day. Thereafter followed a train of events that were inimical to labor peace. Underlying this period of confusion was a swaying demand for and against retention of the W.L.B. the benefits of which either way seemed impractical and unclear.

In commenting on the attitude of the C.I.O. and the A.F.L., Mr. Ahearn noted that a feeling of contempt exists between the two groups. This feeling, he said, is so deep and so great that in the not-too-distant future it may develop into a definite clash, which could have a ruinous effect not only upon the two labor groups but also upon the bystanding labor-contracted industries.

In commenting on the action of the recent labor-management conference held at Washington for the purpose of arriving at formulae and procedures for the peaceful solution of labor problems, Mr. Ahearn noted that a feeling exists that the settlement of jurisdictional disputes should not be left to labor unions. The outcome of such action is to achieve a result that nearly always works only in the interest of a labor group and does not serve the public interest. Many such settlements are often unfair even to the involved unions themselves, he states. The unions at the conference showed an unwillingness to accept any restraints of a "good-faith" nature.

In regard to fact finding, Mr. Ahearn mentioned that the original design of fact finding action as suggested at first was opposed by labor particularly with respect to the 30-day-no-strike period. The unions wanted this item deleted, and fact finding *per se* made clear. Recommendations after findings were to be eliminated and the action otherwise deflated.

Mr. Ahearn feels that the term "fact finding" is a misnomer, since the finders seem to tend to do other arbitrary things in addition to finding the facts. They seem to want to make a sort of fishing expedition into the subject company's books and affairs, while looking ostensibly for germain labor statistics.

The process of settling labor trouble, the speaker continued, has to be adjusted to an action between immediately interested parties. They cannot be allowed, as at present, to spill over into other areas or the outcome will be serious. It will mean government intervention first, and possibly thereafter quick steps to some form of national socialism. There is a clear need for some settlement procedure which is more democratic than compulsory arbitration. Only in special cases, Mr. Ahearn concluded, can government be of help in settling disputes. There must be engendered a superior public interest in labor disputes and voluntary settlement processes created to take care of them.

On Thursday morning, January 24, members of the two associations reassembled for the second and last of their joint sessions. John Prince (Stewart Sand & Material Co.), who was scheduled to preside, was unfortunately kept at home by illness. J. Rutledge Hill (Gifford-Hill & Co., Inc.) served ably in his stead.

**Walling Ruling** In the spring of 1945 Administrator Walling of the wage-and-hour act (Fair Labor Standards Act) issued rulings which altered the coverage of that act with respect to the production of sand and gravel and ready-mixed concrete for the construction of what he called facilities of interstate commerce — railways, highways, and the like. Charles A. Horsky, attorney for the associations, discussed the effects of this action by Mr. Walling and recounted what the associations had done in an effort to change it. Mr. Walling agreed that his ruling had put the industries in an unfortunate position and that he would take no action against employers for anything which they might have done prior to the date on which his ruling was announced. Because he did not then, and does not now, have any authority to limit suits for back wages that might be brought by their employees, all producers in the two industries are exposed to that hazard for whatever period of time is fixed by the state

statutes of limitations effective in the states wherein they do business.

The associations had decided after the promulgation of Mr. Walling's ruling to attempt to upset it in the courts and to take whatever measures in the Congress might have a tendency to ameliorate its effects. The E. C. Schroeder Co. had been sued by some of its employees because it had not paid the wages required by the Fair Labor Standards Act for work they had done in producing materials for several jobs—a railroad track, a spur railroad track, a relocated highway and a dike to retain water collected by the building of a dam. The suit had been dismissed by the District Court, but after the issuance of the Walling ruling the government intervened and asked for a rehearing. In the latter proceeding the district judge reversed his prior ruling and awarded judgment to the employees. As the Schroeder company decided to appeal, the association intervened and Mr. Horsky argued the case before the court. No decision has yet been rendered, although in other cases argued since that time decisions have been announced. Mr. Horsky believes that, whichever side loses, an appeal will be made to the Supreme Court, and that, unless a decision is announced within two weeks, the Supreme Court's decision will not be rendered before next fall.

Mr. Horsky believes that legislative relief from the Congress is needed, even if the final decision in the Schroeder case should be favorable. He discussed briefly two bills now pending in the Congress—the Gwynne bill (HR 2788) in the House, and the Pepper bill in the Senate. The Gwynne bill provides a short period of limitation—one year—within which an employee may file a suit and it covers, in addition to the wage-and-hour act, all money claims under any Federal statute, such as the Copyright Act, the anti-trust laws, the Trade Mark Act, etc. It contains, also, a provision that no one shall be held liable for anything done in reliance upon an administrative ruling or interpretation, which may subsequently have been held to be erroneous. The bill also provides that existing rights will not be cut off if they are asserted within six months, which means that in any state which has a statute of limitation period running back more than a year an employee who files his suit within six months after the Gwynne bill becomes law would still be able to maintain the three-year action, but thereafter all suits would be cut off.

In the Pepper bill pending in the Senate the basic objective is the increase of the statutory minimum wage from the 40 cents an hour, provided by the Fair Labor Standards Act, to 65 cents immediately, to 70 cents in another year, and to 75 cents in another two years. This bill contains, also, a provision setting a Federal statute of limitations of five years within which employee actions in wage suits may be brought, although it is likely that this period will be reduced to three years if the bill is enacted, thus giving effect to recommendations made by Administrator Walling and Secretary of Labor Schwellenbach.

Mr. Horsky added that both bills have been opposed by the American Federation of Labor and the Congress of Industrial Organizations, the first because the period is only one year and the second because it is only three years, the A. F. of L. and the C.I.O. wanting a period of six or, at least, five years.

The wage-and-hour law, Mr. Horsky reminded his audience, contains a specific exemption under which the Interstate Commerce Commission regulates persons who are engaged in interstate commerce and subject to its control, and this exemption has resulted in differences between Administrator Walling's position and that of the I.C.C. In Mr. Walling's opinion only those persons who do more than one-half of their work in connection with activities exempted by the act—those whose work is done in interstate commerce—are within the jurisdiction of the I.C.C., whereas if they do only a little work of that nature, they are not within that jurisdiction, unless they are subject to the wage-and-hour act. On the other hand, the I.C.C. has taken the position that if an employee during any workweek does any work, such as making a single trip in interstate commerce, he thus becomes subject to the I.C.C. and is exempt from regulation under the wage-and-hour act. The question is now awaiting decision by the Supreme Court.

As Mr. Horsky pointed out, the trend as shown by recent court decisions is to extend the coverage of the Fair Labor Standards Act, and for that reason support of the Gwynne bill or of a similar provision in the Pepper bill is particularly important. Additional evidence of this trend is found in the attitude of the courts toward the question of what is time worked. The lumber industry has faced the problem and the Supreme Court has considered it in the coal and iron mining industries. The waiting time of stand-by employees may be construed as time worked, as in a recent Supreme Court case in which fire guards were held to be working although they were only standing in readiness for work.

Mr. Horsky urged his listeners to keep their records carefully, as each week is a unit for separate consideration.

**Surplus Property** H. O. Penn, president of the Associated Equipment Distributors, in a discussion of *The Outlook for Surplus Property in 1946* said that the Army and Navy have held back huge quantities of surplus equipment awaiting information on how much will be needed by reserve forces. The manufacturers of equipment awaiting information on how much will be needed by reserve forces. The manufacturers of equipment, he said, have orders running into 1947, so there is no prospect of machinery becoming widely available in the near future. Mr. Penn said that $12,000,000,000 worth of equipment is still to be sold, and that the sales made so far have amounted to only $1,500,000,000. No appreciable changes in the design of equipment will be made in 1946 in his opinion, and producers will be well advised to purchase the types of equipment now available.

Of the $2,000,000,000 of Federal and state-aid highway money available in June, 1946, only $200,000,000 to $300,000,000 will be spent in contracts to be let this year, because the highway-building programs of the states will be held back by the lack of engineers. Shovels, tractors, trucks, portable sand-and-gravel plants and similar machines are available by the hundreds in Army depots in the United States, he said.

**Federal Taxes** In speaking on the subject *Federal Taxes in 1946* Robert Ash, tax counsel of the associations, said that he sees no reason to expect that tax rates will be reduced soon. He quoted President Truman's budget of $35,125,000,000 as contrasted with estimated revenue of $31,500,000,000. Although government economists have estimated the national income at $160,000,000,000 for 1946 and 1947. Mr. Ash believes that the nation's income is bound to decrease and that no decrease in tax rates is visible for many years to come. In 1946 government expenditures will exceed its revenues by $3,500,000,000. Six

or eight years from now, he said, the Congress may come to realize that the government can get more income in dollars from low tax rates than from high rates. In 1921 tax rates had been reduced by the application of this principle, he said.

Section 735 of the tax law was passed to exempt from taxation certain percentages of production in the natural-resource industries, but, according to the speaker, the Treasury Department is denying relief to some producers who had thought themselves exempt by construing the word "property" to mean a single piece of property acquired through a separate conveyance and not all the property owned by the producer.

Mr. Ash had prepared and presented to the convention a proposed form of contract to be used in cases where producers engage independent contractors to do their hauling. This form was proposed as a means of avoiding the situation in which some producers have found themselves in employing what they believed to be independent contractors but what were held by the courts, as in the Grand Rapids Gravel Company case, to be employees, for whose Social Security taxes, for example, the producers were held liable. The contract form suggested by Mr. Ash would be applicable, of course, only to Federal laws affecting producers and would not remove those who might adopt it from their liability under state laws.

**Price Controls** *Price Controls in the Sand-and-Gravel and Ready-Mixed-Concrete Industries* were discussed by William L. Pringle, Building Materials Price Branch, Office of Price Administration. Maximum Price Regulation 592, through Sections 16 and 17, provides means for giving price relief to ready-mixed-concrete manufacturers. Under Section 16 an individual manufacturer whose supply is essential or low-priced may be granted a price to cover (1) manufacturing cost, (2) total cost, or (3) total cost plus a profit depending on whether his current over-all dollar profits are (1) more than 15 per cent. greater, (2) equal to but not more than 15 per cent. greater, or less than his dollar profits in the base period, 1936 to 1939, after making adjustments for changes that have occurred in his net worth. A manufacturer whose product is neither essential nor low-priced may be granted a price that will cover his total cost, if he is operating at an over-all loss.

Under Section 17, Mr. Pringle said, a uniform adjustment for all the manufacturers in a local area who customarily sell at a substantially uniform price may be made, if it is necessary to maintain a supply of the product they make. The limitations set up in Section 16 are considered by the O.P.A. in making an area adjustment. One method, which is used where it does not produce inflationary results as compared with individual adjustments, grants to all the manufacturers in the area the highest amount required under Section 16 for manufacturers who produce the majority—about 75 per cent—of the total output. Mr. Pringle pointed out that area adjustments do not always give to each producer the price increase needed to relieve his individual hardship condition.

Applicants for individual relief under Section 16 should file their data with the Regional Office of the O.P.A. if their sales are under $1,000,000 a year, or with the Washington office, if their sales are greater. All applications for relief under Section 17 should be filed with the Regional offices.

Building Material Area Orders, the speaker explained, provide dollars-and-cents prices for all important building materials in each important size and specification. They will cover all the sales made to ultimate consumers or to purchasers who buy for resale on an installed basis. Ready-mixed concrete ultimately will be included in every area in which it is made or distributed under orders now being prepared and issued.

These price determinations are designed to replace the vague ceiling prices now in effect as the result of formula, freeze or margin regulations formerly used and to provide a firm basis for more effective control of contractors' prices and actual construction costs. Ultimately this program will aid in checking rising building costs which caused the collapse of the construction industry after World War I.

The speaker said that the O.P.A.'s policy is to remove price control as soon as it appears that such action can be taken without causing prices to rise above the ceilings. When supply generally is in balance with current demand at ceiling prices, he added, O.P.A. will be "only too anxious to suspend price control."

On the subject of "purchaser of the same class" Mr. Pringle said that these may be buyers classified on a functional basis—such as contractors, municipalities, railroads, etc.—or individual customers who prior to and including March, 1942, had been receiving a special price. In the latter case no increase is permissible, regardless of how low the price has been, provided that the pricing at the low price had been continuous.

**Election of Officers** The Thursday afternoon session was opened by the retiring president Robert Mitchell who introduced H. V. Owen, Eastern Rock Products, Inc., Utica, N. Y., who, with J. Rutledge Hill, and John Prince formed the nominating committee. Mr. Owen praised the work done by Mr. Mitchell in his two years as president of the Association and also for the new southern California association. Mr. Owen then announced and introduced the nominees who were unanimously elected. The new officers are:

President: R. N. Coolidge, Cumberland River Sand Co., Nashville, Tenn. Vice President: T. E. Popplewell, Fort Worth Sand & Gravel Co., Fort Worth, Texas. Secretary-Treasurer: H. N. Snyder, Buffalo Slag Co., Buffalo, N. Y.

New directors-at-large are: Floyd C. Fuller, Porthmouth Sand & Gravel Co., Portsmouth, Ohio, J. P. Eyre Price, Wyoming Sand & Stone Co., Scranton, Pa., Eric Ryberg, Utah Sand & Gravel Products Corp., Salt Lake City, Utah, Stephen Stepanian, Arrow Sand & Gravel Co., Columbus, Ohio, R. H. Baker, Dixie Sand & Gravel Corp., Chattanooga, Tenn.

Added to the executive committee were: Eric Ryberg, W. A. Bliss, Keystone Sand Div., Dravo Corp., Pittsburgh, Pa., G. W. Renwick, The Chicago Gravel Co., Chicago, Ill., A. R. Shiely, J. L. Shiely Co., St. Paul, Minn.

Mr. Mitchell then introduced the new president, R. N. Coolidge, who after a brief address took over the chair.

**Specifications and Tests** Stanton Walker then opened the open forum discussion on *Specifications and Test Methods—Trends and Significance.* Participating also were the following experienced testing engineers: J. H. Goshorn, Ohio State Highway Dept.; W. F. Kellerman and F. H. Jackson, U. S. Public Roads Administration.

In opening Mr. Walker outlined the usual specification requirements and discussed the limits, current and

proposed, and their significance. These, he said, are the lifeline of the industry: "they determine what products can find a market; they determine the extent of plant processing needed and the nature of deposits which may be developed economically. Consequently, there is no phase of the industry's operations which is not intimately affected by prevailing specifications and test methods. A knowledge of what the limitations are, and are likely to be, and of their signifiicance is an essential tool of every member of the industry."

**Soundness** Soundness or durability, said Mr. Walker, is probably the most important factor. Most concrete disintegration, he said, is due to other ingredients or causes but aggregate producers are primarily interested in that caused by aggregates. The available tests are no sure guide to the reasons for failure but are the best now known. He pointed out that some aggregates not passing these tests have had good service records and such a record should be regarded as proof that the aggregate is good. Even if the service record is poor, said Mr. Walker, soundness tests may still prove the aggregate to be good.

In the discussion which followed Mr. Goshorn said that Ohio uses the sodium-sulphate test for both concrete and asphalt aggregates. With natural sands sodium-sulphate tests showed a much lower loss than magnesium-sulphate tests. With gravels about the same results were obtained with both tests.

Mr. Jackson commented that he was in agreement with Mr. Walker that these tests were the best now known but that they are not perfect, and that the service record is still the best guide.

Mr. Kellerman said that when a uniform source of supply is used these tests are a good guide but otherwise the service is more important.

J. F. Barbee, Ohio State Highway Dept., said that the records of highways built during a period of years ending in 1942 were carefully checked and by a process of elimination the sources of good and bad aggregates were found. The questionable aggregates are now being tested for soundness and, he said, most of them are at or below the borderline.

**Deleterious Substances** On the subject of deleterious substances Mr. Walker enumerated shale, clay, lignite, etc. The soundness of an aggregate, he said, is affected by the quantity and nature of the deleterious matter it contains but separate determinations are necessary. The worst problem is where to draw the arbitrary line between deleterious and non-deleterious matter. He described the various methods tried for such determination and told why none is suitable and why the search for a better method must continue.

Several producers voiced their opinions that the importance of soft particles is overemphasized and that many aggregates with high content have given good service records. Mr. Jackson conceded this point, saying that the definitions on soft particles vary in different states to meet their conditions. Mr. Walker said that abrasion test limits vary widely in different areas to meet conditions and that there can be wide variation with little effect on compressive strength but considerable effect on tensile strength. This test, he said, is most important for aggregates used for other purposes than concrete, such as railroad ballast, bituminous mixtures, etc.

**Simplified Practice** Mr. Walker then discussed simplified practice sizes for coarse aggregates as promulgated by the Division of Simplified Practice of the National Bureau of Standards. These are gaining acceptance but some modifications are desirable to meet the objections of both producers and consumers.

Except for certain special sizes Simplified Practice outlines 9 primary sizes from 3½ inches to No. 16. These overlap considerably and in some combination can be used in nearly any area, but in no one area would all be needed. The producers problem is making these without the addition of special equipment. In Mr. Walker's opinion if special equipment is required these specifications are too severe, but if they can be met with indifferent equipment they are too lax. They should be so written that any modern, efficient plant can meet them. He asked producers to provide him with screening data for study.

Mr. Walker also warned all producers to be prepared to produce separated sizes. In his opinion only two sizes are necessary for aggregates up to 2 inches, three sizes for coarser aggregates.

Irving Warner, Warner Co., Philadelphia, reminded listeners that simplified practice was first discussed at the 1936 convention. Its provisions, he said, are easier to meet with crushed than with natural gravel, and by using 50 per cent. crushed and careful screening the simplified practice requirements can be met.

Mr. Walker pointed out that the trend is toward the use of the same specifications for concrete and bituminized aggregates. The trend toward more minus-50-and-100-mesh fines, he said, is a headache for producers and is unfair to well-graded sands. He mentioned that, of 214 sands tested by the association, with 4,400 sieve tests, 90 per cent. failed to meet the War Department minimum of 3½ per cent. through 100 mesh and 51 per cent. failed on 12 per cent. through 50 mesh. He said that fines should be added separately as needed at the mixer. These fines could be obtained from crusher screenings, etc., or purchased from industrial sand plants. This subject is important now, said Mr. Walker, but air-entraining cements may soon make the use of blending sands unnecessary.

**Manufacturers' Division** The annual meeting of the Manufacturers division of the National Sand & Gravel Association and the National Ready Mixed Concrete Association was held on January 24. New officers elected for the coming year were as follows:

Chairman: Abe Goldberg, Allis-Chalmers Mfg. Co., Milwaukee.

Vice Chairmen: E. J. Goss, Koehring Co., Milwaukee; G. K. Viall, Chain Belt Co., Milwaukee; W. W. King, W. S. Tyler Co., Cleveland; A. E. Conover, Robins Conveyors Inc., Passaic, N. J.; E. C. Anderson, Kensington Steel, Chicago; M. A. Butler, Butler Bin Co., Waukesha, Wis.

New members of the board of directors are: R. C. Johnson, Simplicity Engr. Co., Durand, Mich.; J. C. McLanahan, McLanahan & Stone Corp., Hollidaysburg, Pa.; C. B. Laird, Eagle Iron Works, Des Moines; R. P. McKendrick, Blaw-Knox Co., Pittsburgh, Pa.; W. A. Wirene; E. M. Houston, Bucyrus-Erie Co., Milwaukee.

The manufacturers were in favor of having exhibits at the convention in Los Angeles next year if facilities are available. It was agreed, however, that unless the convention meetings and exhibits were in the same building, there should be no exhibits. A resolution was passed whereby a joint exhibit is to be held not later than 1948 and to be held every other year thereafter; subsequent exhibits will be held in the years in which the American Road Builders Association has no exhibits.

# Strasburg Lime Completes New Kiln, Will Modernize Other Facilities

another ON THE SPOT report

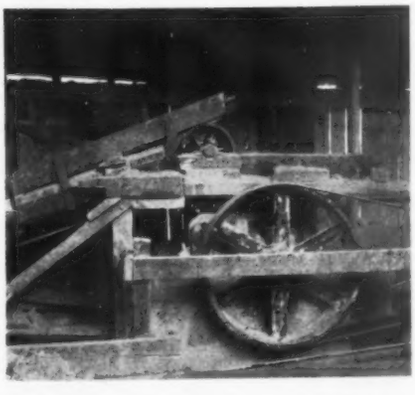
ONE of the very few Azbe-type kilns in the state of Virginia was recently completed at the Strasburg Lime Company, Strasburg, Virginia. The new kiln, which is gas fired, is about 40 feet in height and its capacity is expected to be approximately 50 tons in 24 hours, or roughly as much as the four conventional kilns now in operation.

Completion of the kiln is just one phase of a broad program of improvement and modernization on which the company expects ultimately to expend about $80,000. Half this amount is being spent at present on the kilns, in the construction of a new crushing plant, and to modernize haulage from the quarry; the remainder at some future date will cover the installation of a fine-grinding plant with which the company plans to produce a special grade of material for the plastics industry.

**By WILLIAM M. AVERY**

General view of plant showing recently completed kiln in foreground and 4 older kilns at right.

In common with many of the smaller operators in this section of the country the company has always practiced hand loading in the quarry. A considerable amount of hand sledging has been necessary, and one inevitable result has been a wide variation in the size of the stone fed to the kilns. To eliminate this handicap the company plans, as soon as equipment can be obtained, to install power shovels in the quarry and to replace the small side-dump cars now in use with Koehring 6-cubic yard Dumptors.



Single-roll (18 by 24-inch) crusher. See text for explanation of flat-belt drive.

The Dumptors will haul stone to a feeder ahead of a 24- by 36-inch jaw crusher located on the rim of the quarry above the plant. The stone will be reduced to about 7 inches and fed by means of a 30-inch belt conveyor to a 2-deck 4- by 10-foot Tyler screen installed above a 2-pocket surge bin. Kiln-feed stone will be drawn off into skip cars and elevated to the top of the kilns where they will be dumped automatically. Open-hearth and blast furnace stone will drop into a special compartment adjacent to the surge bin. Since the quarry deposit contains two fairly-distinct grades of stone, the two pockets of the surge bin may be used for blending to obtain the optimum grade of kiln feed. Kiln stone will average between 5 and 8 inches in size.

View under cooling pit, showing belt conveyor used as feeder.

In the plant proper, lime from the kilns is wheeled in buggies to a floor-level 30-ton cooling pit lined with steel plates. The unique method developed by the company for feeding the material to the crusher has been adopted by a number of competitive plants in the locality. The pit is centered above a 30-inch inclined belt conveyor with the sloping sides terminating at the edges of the belt. Short steel plates which slide in grooves just above the belt carry the weight of the material and protect the belt from excessive wear and heat. The plates are removed one by one, starting, of course, with the plate closest to the head shaft of the conveyor, until the entire pit is emptied. The conveyor belt is supported by steel plates instead of the usual rollers.

The crusher is an 18- by 24-inch McLanahan & Stone single-roll unit which has been in operation for a number of years. The company had received some complaints from resi-

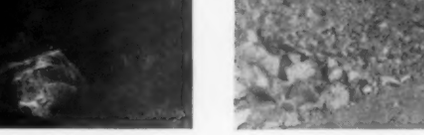
View in quarry showing narrow-gauge haulage track now in use. Truck haulage will be adopted in near future.

Pit in which lime is cooled after it is drawn from kilns. Below-grade lime is removed by hand from conveyor (right).

dents of the near-by town of Strasburg concerning the noise made by the crusher, so when the spur gearing was damaged several years ago it was decided to install a flat-belt drive. An obsolete engine frame was used for the motor and jack shaft mounting and the objectionable noise was completely eliminated.

The crushed material drops on a 24-inch belt conveyor and is elevated to screens adjacent to and above the railway siding in the plant, and the screened material is discharged directly into cars for shipment.

As soon as possible the company plans to convert the largest of the four old kilns to the Azbe design and to cease operating the remaining three. With the improved efficiency of the center burners on two kilns,



Base of new kiln with independent stationary gas producer at right.

and the additional advantage of uniform grading of the feed stone, it is anticipated that production of 100 tons per 24 hours can easily be maintained.

The company's improvement program is being carried out entirely with its normal labor crew, and in consequence many delays are incurred. On an average not more than two or three days per week can be devoted to construction and installation work; regular maintenance and repair work accounts for the remainder of the time. Notwithstanding these obstacles and the difficulty of obtaining new machinery, the program is now well along and the expected benefits in terms of increased production and improved quality will soon materialize.

C. A. Dunning is president and A. R. Dunning is secretary-treasurer of the Strasburg Lime Company.

## New Indiana Plant

(*Continued from page* 67)

loaded through clamshell gates.

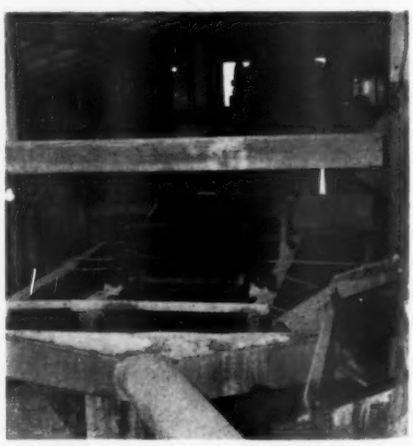
Fred Lamb, superintendent of the Richmond plant, has been with the company for more than 15 years. He was formerly in charge of production at temporary plants which supplied material for locks and dams in West Virginia and Ohio, and prior to that, was located at the Oxford, Michigan, plant of the company.

One of the 4-foot short head cone crushers.

A hot-mix bituminizing plant and also a precast concrete products plant which were built adjacent to the Richmond gravel plant consume large quantities of material. The corporation has encouraged the installation of such plants near its operations and often on its properties.

American Aggregates has recently purchased 250 additional acres of good gravel land adjoining the present Richmond plant and is installing a 16-inch electric rotary suction dredge and field desanding plant in order to increase its output. A portion of the desanding material from this new deposit will be hauled to the present plant and a portion will be shipped from the desanding plant to the trade.

Who are the important nonmetallic minerals producers in New York—California—Minnesota? Only the Pit and Quarry Directory can tell you.



A 50-ton sand drag is used to produce masons' sand.

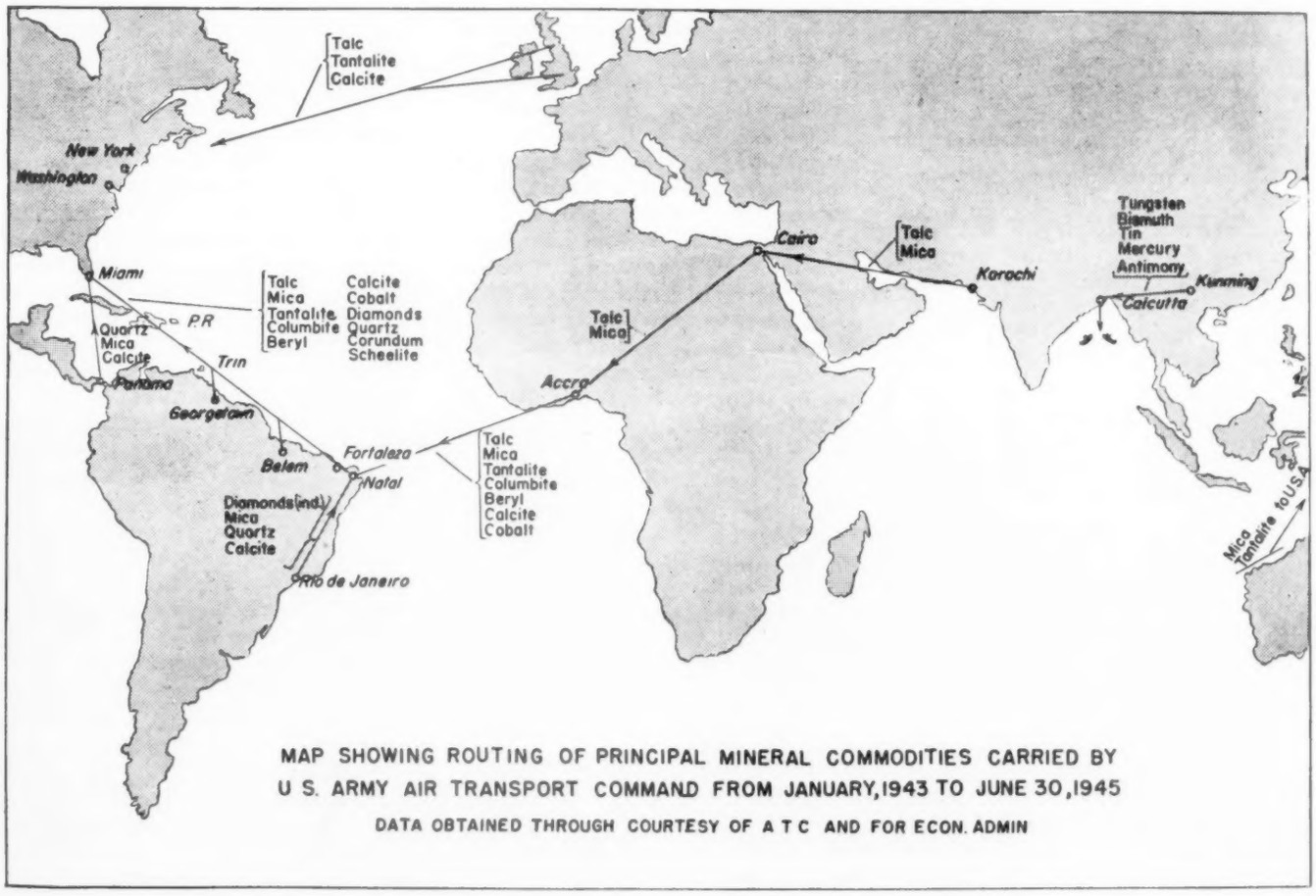
# 6,000 Tons of Critical Minerals Flown Into Country During War By Air Transport Command

IN 1943, 1944, and the first half of 1945, when all available aircraft were deemed vital to aerial combat, it became necessary to curtail the combat assignments of certain bombers in order that they might be employed in transporting such critical minerals as beryl, talc, columbite, tantalite, scheelite, sheet mica, quartz crystals, and industrial diamonds to the Allied countries where they were urgently needed to meet production schedules for aircraft as well as other vital implements of war. In this 2½-year period the Air Transport Command transported to this country nearly 12,000,000 pounds of minerals from various parts of the globe.

In an article by Dean Edward Steidle, which appeared in the December *Mineral Industries,* a monthly publication of the School of Mineral Industries of the Pennsylvania State College, State College, Pa., the amount of strategic and critical mineral raw materials which were transported by air during the war to supply the needs of the United Nations is revealed to the public for the first time. The following information and the accompanying chart were furnished by the Air Transport Command.

Beryl was urgently needed to provide beryllium-copper alloys for use in aircraft parts, and ore supplies amounting to over 3,000,000 pounds were flown in from South America. Over 1,000,000 pounds of tantalum and columbium ore, needed for certain aircraft parts, were transported from India, Africa, and South America. Over 30,000 pounds of industrial diamonds and corundum, for use in precision grinding and in die manufacture, were brought in from Africa and South America. Air shipments of mica and quartz crystals, for use in radio and radar equipment, amounted to over 5,500,000 pounds, and came from India, Australia, Central and South America, and Africa. Talc or steatite was needed for the manufacture of ceramic radio insulators and, during 1943 and 1944, over 750,000 pounds of it was brought in from India, Brazil, and Scotland. Tungsten, bismuth, tin, mercury, and antimony were flown over the hump from Kunming and other points in China to near Calcutta, from which port they went by water to the United States and Russia. Samples of mineral raw materials were brought to the United States from many parts of the world, and it is assumed that supplies of uranium ore were brought by air from Africa and the Northwest Territory but tonnage figures are not available. Sheet mica was the principal item flown to the United Kingdom while Russia was the recipient of large quantities of bismuth and tin.

Dean Steidle points out that in spite of the need for aircraft in combat, the critical materials needed in bomber and fighter plane production had to be in part, 6,000 tons, supplied by air transportation. Not only were mineral raw materials supplied to this and other Allied countries by the ATC, but numerous other commodities such as precision instruments, rare chemicals and drugs, and special equipment were flown to those parts of the world where they were urgently needed.




MAP SHOWING ROUTING OF PRINCIPAL MINERAL COMMODITIES CARRIED BY U S. ARMY AIR TRANSPORT COMMAND FROM JANUARY, 1943 TO JUNE 30, 1945

DATA OBTAINED THROUGH COURTESY OF A T C AND FOR ECON. ADMIN

# American Road Builders Association Holds 43rd Annual Meeting in Chicago

AT the 43rd annual meeting of the American Road Builders Association, held January 14 to 17 in Chicago, member delegates considered a vast program of highway building, despite warnings of a pessimistic outlook for road construction.

President James J. Skelly, in delivering the opening address, sounded an optimistic note for the association's 1946 program and listed the highlights of the past year's achievements. Special mention was made of the work of the following: Major L. A. Long, manager of the County Highway Officials and the Municipal Officials divisions; W. R. Macatee, manager of the Airports Division; Professor Roscoe Ellard, president of the Public Relations Division; Burton F. Miller, managing director of the Contractors Division; H. F. Clemmer, general chairman of the Technical Division; Charles M. Upham, engineer-director of the association. He also mentioned the 20 trainees from the Latin-American republics who will arrive in April to study American highway departments and road projects after a four-weeks' course arranged by the Inter-American Highway Training Award. At the conclusion of their tour the trainees will spend eight months in gaining practical experience with manufacturers, highway departments and on road jobs.

Charles M. Upham, A.R.B.A. engineering director, indicated that the association's immediate problem would be to put highways into condition to handle 40,000,000 motor vehicles by 1950. Mr. Upham added that only 49 per cent. of county and local roads, 73 per cent. of municipal streets and 83 per cent. of state highways have all-weather surfaces.

General Philip B. Fleming, Federal Works Agency administrator, described the labor shortage and uncertainty of material costs as the major stumbling blocks in carrying out the association's highway program. He asserted that the most pressing need is to maintain prices at their present level and to capitalize fully on the quantity of materials and labor in every contract.

Rep. J. W. Robinson (D., Utah) placed the responsibility for cutting down highway traffic fatalities with the state governments. He recommended more stringent drivers' license requirements, stricter law enforcement and vehicle inspection.

Left to right: T. H. MacDonald; Rep. Paul Cunningham (R., Iowa); Senor Gilberto del Arenal, acting for Senor Montes de Oca, at presentation of Pan American awards.

Substituting for H. A. MacDonald, president of the American Association of State Highway Officials, who was unable to attend, W. W. Polk, vice-president, Third District, A.A.S.H.O., addressed the delegates on the theme of cooperation in the post-war highway program.

*The Role of the U. S. Army Engineers in the Post-war Construction Program* was the subject of an address delivered on the second day of the convention by Lieutenant General R. A. Wheeler, Chief of Engineers, U. S. Army. General Wheeler gave enthusiastic praise to American road builders and the "roadbuilder in uniform," whom he saw in action during World War II in Burma and China. He also paid tribute to the American equipment industry, which accounted for a large part of the "margin of superiority" enjoyed by the Allies in the recent conflict. General Wheeler outlined as follows the threefold future program assigned to the Office of the Chief of Engineers: (1) the study of equipment designed for issue to engineer troops, particularly earth-moving and heavy construction equipment; (2) a series of studies on porous concrete, slope protection, the properties of concrete, air entrainment and so on; (3) design and construction methods for airfield pavements, most of which are related to road building.

The place of stabilized roads in the country highway program was discussed by G. W. Deibler, St. Louis County highway engineer, Minnesota, during the technical session.

How the A.R.B.A. expedites construction of ground facilities for airlines and private fliers was explained by Major General J. L. Schley, U. S. Army (Ret.), president, Airport Division, A.R.B.A. (General Schley is also director of the Baltimore Aviation Commission.) William A. M. Burden, Assistant Secretary of Commerce, next discussed the scope of the C.A.A. national airport plan.

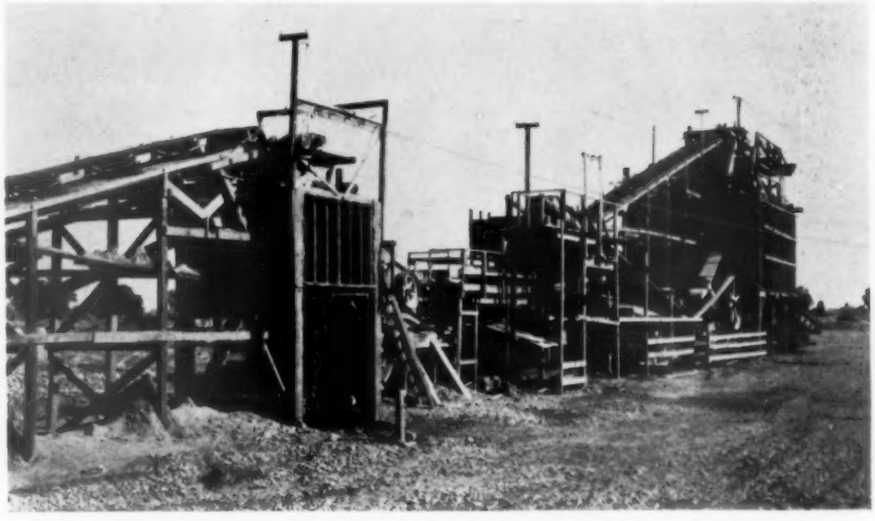
At the annual banquet, the climax of the convention, the Pan-American award for outstanding achievement in the development of the Pan-American Highway was featured. The North American recipient was Thomas H. MacDonald, Commissioner, Public Roads Administration, F.W.A. Senor Montes de Oca, president of Banco Internacional, S.A., and honorary life president, Asociacion Mexicana Automovilistica, Mexico, was the Latin American recipient. The presentations were made by Rep. Paul Cunningham (R., Iowa), a member of the House roads committee. President Skelly's testimonial to Carl W. Brown, past president of A.R.B.A., followed. The banquet address was delivered by Rep. Jennings Randolph (D., W. Va.).

# New Sand and Gravel Plant Near Shasta Dam Reaches Peak Production

another ON THE SPOT report

A NEW sand-and-gravel plant, one of the first commercial operations to be located in this area, was erected in Red Bluff, California, in 1945 by the firm of Draper & Adams to supply a growing demand for highway and general construction aggregates in that section

**By HARRY F. UTLEY**



General view from the pit end of the Draper & Adams plant at Red Bluff, Calif.

of northern California. Red Bluff is 31 miles south of Redding, near which Shasta Dam is located, and is at the head of the Sacramento River Valley which is now being irrigated and developed.

The plant, which went into operation in June, 1945, has been operating at near capacity in recent months, producing between 90 and 100 tons per hour at the peak of operation. The partners in the new venture are Archie Draper, who has been engaged in excavating work and general contracting for several years, and Floyd Adams, a retail merchant of Red Bluff. The plant represents an investment of more than $40,000 exclusive of the leased deposit, which consists of 13 acres of excellent material in the Sacramento River bottoms near the city.

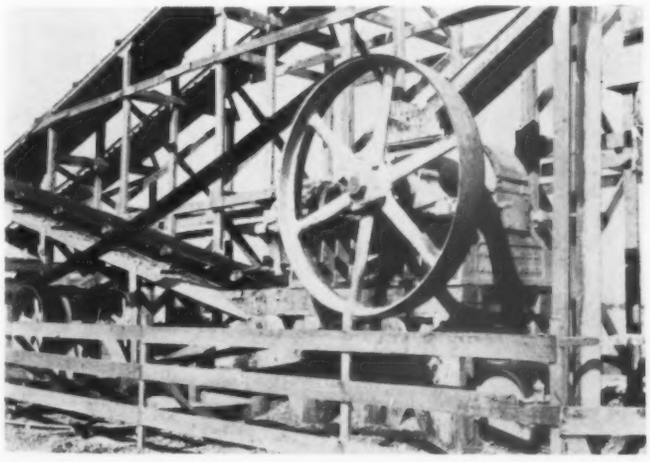
A 1-cubic yard cableway operated by a double-drum hoist excavates the material and brings it direct to the plant hopper located below ground level. A plate feeder puts the pit-run sand and gravel on a 36-inch by 75-foot belt-conveyor which carries it to a 3- by 8-foot double-deck Niagara screen. This scalps off the plus-1½-inch pebbles, sending them by way of a chute to a 10- by 24-inch Cedarapids jaw crusher. The fine bottom-deck throughs from the screen may be diverted to a 12-cubic yard truck-loading bin for disposal, or it can be conveyed, along with the material retained on the lower deck, plus the product of the jaw crusher, up to the washing-and-sizing screen. This conveyor is 135 feet long and is equipped with 30-inch belting and Link-Belt idlers.

The material, now reduced to 1½ inches and under, is wash and sized over a 4- by 10-foot Niagara screen with divided double decks, and equipped with washing sprays on both decks. The sand and water passing the screen is flumed to a drag box where the sand is scoured and dewatered. The sand and sized products of the screen ranging in size from 1½-inch to 3/16-inch gravel, drop into the proper sections of the 6-compartment storage bin; or the larger material may be passed to a 15- by 40-inch Allis-Chalmers double-roll crusher for further reduction. The crusher is in closed circuit with the 135-foot belt, the return conveyor being 50 feet long.

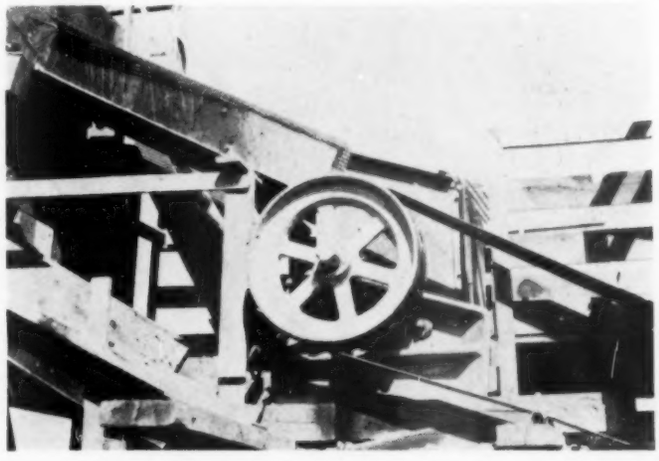
All material is loaded into trucks for delivery, being weighed out on a Fairbanks truck scale at the plant office.

The plant is of timber construction for the most part and much of the equipment was acquired second

(*Continued on Page* 86)



The double-roll reduction crusher is in closed circuit with main belt.



View of the 10- by 24-inch primary jaw crusher.

# Aggregates Plant Adds Hot-Mix Unit, Speeds Up Production

By HARRY F. UTLEY

A general view of the Walter B. Roselip sand-and-gravel plant, Atascadero, California.

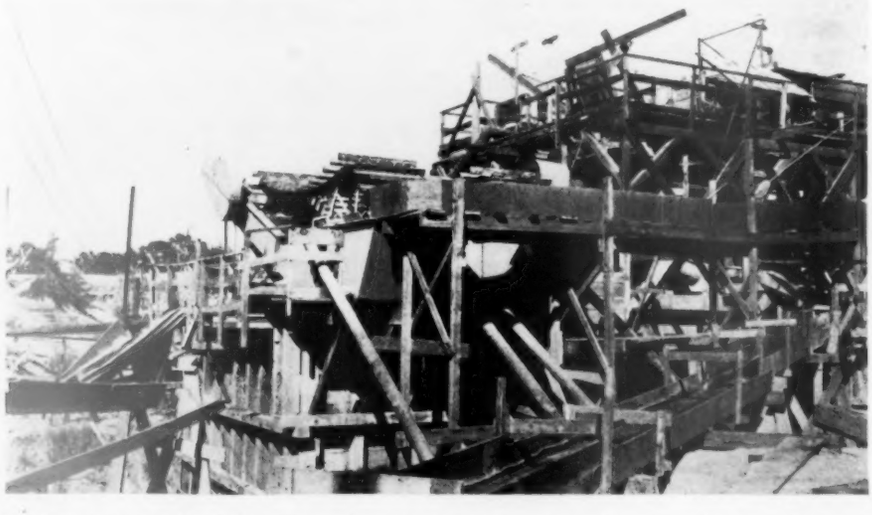
A view of the aggregate-bituminizing plant, with stock-piled material in the foreground.

WAR activity on the Pacific Coast made the sand-and-gravel plant of Walter B. Roselip near Atascadero, California, a scene of extreme activity. The concern's dump trucks left the plant in a constant stream almost daily carrying materials to Camp Roberts, Camp San Luis Obispo, and the Navy's new amphibious training base on Morro Bay. Besides commercial aggregates, a hot-mixed bituminizing plant is operated on the property, and hundreds of tons of asphaltic material has been prepared and delivered to the firm's many customers.

Owned and operated by Mr. Roselip, assisted by his son, Bernard, the sand-and-gravel plant was placed in production eight or ten years ago. Last summer the truck-loading bins were rebuilt and two new 48-inch sand drags were installed, replacing two smaller drags. The new sand-making equipment, built by the Conveyor Company of Los Angeles, was a necessary improvement, since too many fines were being wasted with the old drags and the concern needed increasing amounts of sand desperately desired in government specification material. With the larger drags, the Roselips are now able to produce six times as much sand as formerly from the same raw-material input.

To speed truck loading from open storage, a new McCaffrey tractor-shovel was also placed in service a few months ago. This unit, equipped with a 1¼-cubic-yard bucket and mounted on a Caterpillar tractor, is said to load trucks twice as fast as the old endless-bucket loader and to have eliminated idle time of trucks and drivers to a large extent.

The new tractor-shovel used to load trucks from the stock pile.



The two new 48-inch sand drags produce six times as much sand as formerly, from the same tonnage of input.

A little more than two years ago the Standard Steel asphalt plant was erected. It is of interest to note that a large portion of the bituminized product is being sold to ranchers who pick it up in their own trucks and utilize it for driveways, paving corrals and barnyards, and a variety of other uses. The Roselips are actively promoting this channel of sales by direct solicitation and through the mails. By using RC3 asphalt in the mix, material sold to ranchers may be stock-piled three to four months at the plant before use without losing its binding qualities and thus may be produced during relatively slack periods. The low volatility of the RC3 mixture is also favored by the ranchers.

# WAGNER QUARRIES CO. MODERNIZATION OF DRILLING AND HAULAGE BEGUN WITH NEW EQUIPMENT

By WALTER E. TRAUFFER

another ON THE SPOT report

THE Wagner Quarries Co., Sandusky, Ohio, had operated its plant and quarry near that city for 21 years with only minor improvements from time to time when, as the war came to a close, it embarked on a program which, when completed, will completely modernize the quarry and haulage system. This program began when one of the three old-style Loomis well drills was replaced with a new crawler-type Loomis machine. Two more will be added as soon as they can be obtained. Early in September, 1945, a new 54B Bucyrus-Erie 2½-cu. yd. full-revolving diesel shovel was received and put in operation after having been on order for nearly a year. This supplements a 16-year old 120B Bucyrus-Erie 4½-cu. yd. electric shovel. A new Allis-Chalmers diesel tractor equipped with a Baker bulldozer cleans up around the trucks and helps maintain the roads for the new truck fleet. This fleet now consists of five Mack diesel trucks with 15-ton Gar Wood bodies, and a sixth truck is on order. They replaced a locomotive and car haulage system consisting of two 25-ton gasoline and two 20-ton steam locomotives each hauling from 10 to 12 cars of 8-cu. yd. capacity each.

The 4½-cu. yd. electric shovel loading a truck with a 15-ton dump body at the Wagner Quarries Company, Sandusky, Ohio.

The quarry and plant are located on a 500-acre property of which about 75 acres has been worked out to an average depth of about 48 feet. The dirt overburden averages 30 inches in depth and for more than 15 years most of this has been removed by a local contractor who in return uses it for fills. Before this arrangement was made the company removed the dirt to a waste pile at high cost. Some dirt is still removed in wintertime with the company's quarry equipment.

The limestone deposit is hard with thin horizontal strata and vertical seams in a broken formation. This presents a difficult drilling problem which is handled very well by the Loomis well drills, three of which are in constant use. The blast holes are drilled 52 to 54 feet deep, depending on conditions. Because of the nearness to a residential section only 3 or 4 holes in a single row are detonated at one time. These are spaced 14 feet in each direction. Atlas 40 per cent. explosive is used and this is detonated by the new Atlas Rockmaster delayed firing system[1] which gives a quieter shot and better breakage than the method formerly used.

[1]Avery, William M. "New System and Electrical Devices Improve Blasting Efficiency," Pit and Quarry, November, 1945, page 96.

Below, left: new 2½-cu.-yd. diesel shovel cleaning up the quarry floor and loading a truck; right: truck with 15-ton dump body dumping a load of stone to the primary crusher. Note dual telescoping hydraulic hoist.

Excellent breakage is now obtained but a few of the thicker ledges still make necessary considerable secondary shooting. The large rock is drilled with jackhammers

Diesel tractor with bulldozer cleaning up the quarry floor.

equipped with Ingersoll-Rand Jackbits which are especially advantageous during the present shortage of blacksmiths.

Both shovels are used continuously for loading and the use of trucks makes it possible to shift from one to the other as necessary to keep down waiting time. Ordinarily the new diesel shovel is used at the face but it is also used to clean up after the large shovel. It has a Buda Lanova engine and all-welded boom, dipped stick and dipper. The tractor has a General Motors 4-cyl. 2-cycle diesel engine and is equipped with a cab which protects the driver in any weather. The bulldozer is an army type with a straight blade for pushing only, and with floating discs which keep the blade from gouging into the rock.

The four company trucks lined up at the primary crusher.

The trucks have 15-ton Gar Wood heavy-duty Boulder Dam-type rear-dump bodies with dual, 4-section telescoping hydraulic hoists. These can be adjusted to dump at any desired point before reaching the end of the stroke of the last and smallest section of the hoist, thus eliminating any jerk.

The Mack trucks are both Model LMSWM army type with dual driven rear axles and dual transmissions. They are equipped with 12- by 24-in., 16-ply tires on the two front wheels and the four dual rear wheels. They are powered by Cummins 6-cyl., 150-hp., diesel engines which are governed to a maximum speed of 1,800 r.p.m. An overdrive makes possible 10 speeds forward and two backward. When empty the trucks run in fifth gear up to 30 m.p.h. When loaded a truck weighs 32 tons and on the level the fourth gear gives speeds up to 20 m.p.h. and the trucks climb a slight grade up to the crusher building in this gear. A tachometer is used which is red below the 1400-r.p.m. mark and a shift is made to a lower gear whenever the engine speed drops to that point. The trucks are equipped with Westinghouse air brakes.

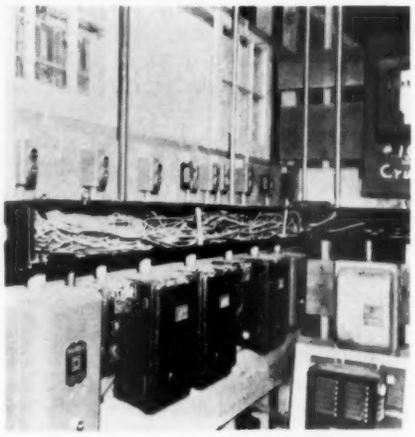
The distance from the quarry face to the plant is about ½ mile and the round trip is usually made in about 8 minutes. Each truck averages from 130 to 140 miles in an 8-hour day. The record is 154 miles. The road is black top up to within a few hundred feet of the quarry face and is wide enough for two trucks to pass each other with room to spare.

At the plant two trucks can dump side by side to the 36-in. Allis-Chalmers primary gyratory crusher. The plant has a capacity in 8 hours of 5,000 tons of ballast, road rock and incidental agricultural limestone.

## New Sand-Gravel Plant

(*Continued from page* 83)

hand, since new machinery was next to impossible to obtain during the period of plant construction which coincided with our all-out effort of "crushing" the Germans and Japs. Much of the equipment was rebuilt before installation, however, and it has been doing quite a satisfactory



All equipment is controlled by push buttons from central switch house.

job for the owners. They already have plans for improvements in mind, however, and expect to utilize the newest developments in production machinery as they become generally available.

The water supply is provided by the adjacent Sacramento River and is pumped by a Layne & Bowler 6-inch centrifugal unit. All the equipment is electrically-powered by separate motors, the installed motors totaling 292½ horsepower. A transformer at the plant steps the current, purchased from the Pacific Gas & Electric Company, down to 440 volts, and all controls are centered in a switch-house where an operator can view the entire plant and cut out any or all the machines or conveyors in case trouble develops.

A surplus accumulation of pea gravel and fines is to be utilized shortly in the manufacture of concrete blocks and tiles. The block plant, to be built on the premises, will be a separate venture and is to be erected by C. E. Isley and J. S. Miller, who will operate it. A Flam "Challenger" vibrating machine will mold the units.

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Considerable paring of appropriations for Bureau of Mines exploration and pilot-plant operation in 1946 was done after the cessation of hostilities last fall. The House, in passing the rescission bill (H. R. 4407) late in October, cut the Bureau's original research budget figure from $5,350,000 to $4,000,000.

# Preventive Maintenance Pays Off For So. Dakota Aggregates Producer

another P AND Q exclusive

THE operation of two stationary aggregate plants with a daily production capacity of almost 4,000 tons and two portable plants with a combined daily capacity of 8,000 tons on a 24-hour basis requires a well-integrated program of equipment maintenance. L. G. Everist, Inc., of Sioux Falls, S. D., has produced over 2,500,000 tons of aggregate from one pit alone during the last 10 years, and keeps material running over the conveyor belts by keeping all equipment on the production line-up and out of the repair shop.

"It's an ounce of prevention, or maybe a couple of pounds of lubrication, that does it," comments P. O. Pederson, manager of the firm. "Our equipment maintenance program, which we started over 15 years ago when we first went into the business of producing aggregates, has paid us rich dividends during this last year or two when it has been next to impossible to obtain new equipment and, in many instances, even repair parts. Our plants are in good condition and that is true of our loading and hauling equipment as well."

L. G. Everist, Inc., operates a stationary plant at Hawarden, Iowa, where, from a pit with a 40-foot face, 20 feet in the water, a specially designed and built all-steel screening plant runs through some 2,000 tons of five grades of material each day. In operation at this location are a 4-cu.-yd. Marion diesel dragline with an 80-foot boom, an International TD18 'dozer and four 13-cu.-yd. end-dump Euclid trucks. The arrangement of screws and screens in the plant is such that pit run and concrete mixes may be blended to almost any desired specifications.

Although operations at this pit continue on an around-the-clock basis during some five months of the year, a well-trained crew of mechanics under the supervision of Francis Vogelzand keeps the loading, hauling and screening equipment in operation at all times. Regular field checks are made of the Marion shovel with particular emphasis on inspection and lubrication of the lengths of one and one-quarter inch preformed wire rope dragline cables. The firm originally selected a preformed-type wire rope for the grueling in-and-out of water operations because they had discovered that preformed cable outlasted ordinary wire rope by a ratio of almost two to one.

By careful operation, and regular lubrication of the cables, the firm was able to even further extend the working life of the dragline cables, despite the fact that often during 24-hour stretches very little time out was given the unit with its 4-cu.-yd. loads. Inspections of the shovel include routine checks for signs of wear or loose and wobbly parts. An effort is made to replace any worn part as soon as it is discovered. Regular lubrication of all moving parts is a fundamental of the Everist maintenance program. Examination of bearings and proper shaft alignment is another important phase of the program.

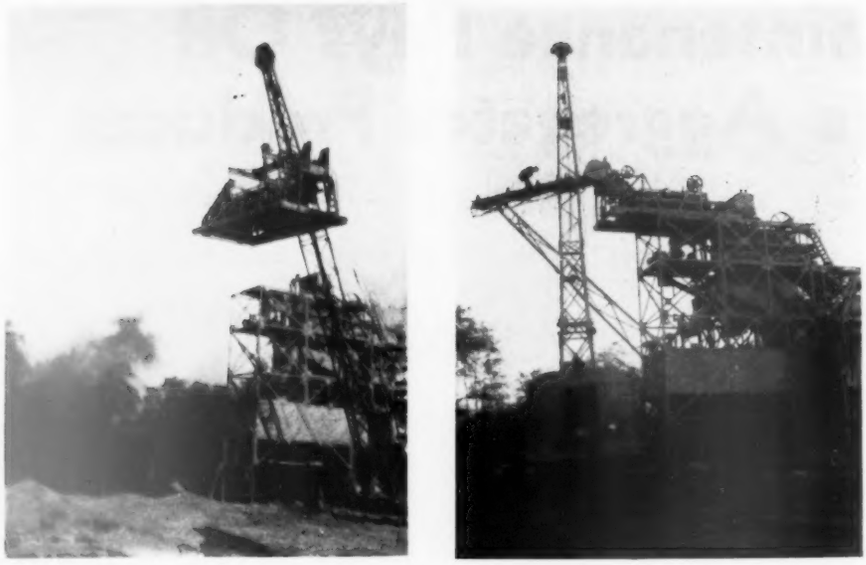
With the screening and crushing unit, mechanics check plates and when possible reverse jaws. Worn jaws will not grab and crush material and thus will decrease plant capacity. Most worn jaws can be salvaged by built-up welding and the use of filler bars. Only a few inches of jaw plate should be welded at a time, however, to avoid warping of the parent metal.

With the other equipment—the large Euclid trucks, the tractors, the pumps—the same careful attention is paid to the condition of the equipment. Regular checks and preventive maintenance have kept the equipment on the job, producing aggregate for important war contracts throughout the Northwest.

The second Everist stationary plant is located at Dell Rapids, S. D., about 20 miles north of Sioux Falls, where 80 tons of crushed and sized quartzite are run through the plant every hour. This quarry has a 40-foot face and two Armstrong churn drills are used in the pit, drilling an average of one foot per hour. Loading and hauling equipment here includes a 1-cu.-yd. Bucyrus-Erie shovel and an Allis-Chalmers hoist with quarry cars. Large quantities of preformed wire rope are used and the same careful attention is paid its operation and lubrication as at Hawarden. On the Bucyrus-Erie shovel, C. C. Marshman, who is in charge of operations at this pit, has discovered that by turning the cables end for end at regular intervals, and by cutting off a length from an end

**By HOWARD V. PEHRSON**

General view of portable plant operated by L. G. Everist, Inc., of Sioux Falls, South Dakota.



Two views of assembly operations in progress at one of the company's stationary plants.

of the cable to change the position of the rope on the drums, it is possible to extend its life even further.

At this pit, Everist uses a 10-in. Superior McCully crusher with 4-by 10-ft. Symons scalping screens. Oversize is handled by a 6-in. Superior McCully gyratory crusher with throughs at the screening plant running over Allis-Chalmers and Diamond vibrating screens. Four grades of crushed rock, and sand from ⅛-inch down are produced at Dell Rapids.

In addition to these stationary plants, the firm operates two Iowa Manufacturing Co. portable crushing and screening plants. The productive capacity of each of these plants is between 150 and 200 tons of coarse aggregate per hour. In operation of the portable units, the firm carefully follows the recommendations of the manufacturer and checks and inspections are made according to the manufacturer's suggestions.

Perhaps the best indication of the success of the planned program of preventive maintenance practiced by L. G. Everist, Inc., is the scope of the contracts held by the firm during the past few years. Among aggregate contracts completed were materials for buildings and concrete runways for an airport at Sioux Falls, and for a large ordnance depot at Provo, S. D. More than 250,000 tons of sand and crushed rock for runways at the Rapid City, S. D., air base were produced by a portable plant at the job site.

The preventive maintenance program enabled the firm to continue producing aggregates needed in construction of important Northwestern war projects. As America went all-out for war, Everist tightened up on its maintenance program, taking better care than ever before of the aggregate-producing equipment. No small credit must go to the discovery (more than 15 years ago when the firm was first established) that no matter how soundly constructed a unit of construction equipment may be, it will produce with high efficiency only as long as it is carefully operated, well lubricated and properly serviced.

## Regional Shippers See Advance in Nonmetals

A report by the Regional Shippers Advisory Board of the Association of American Railroads indicates that there will be a general increase in freight car loadings of nonmetallic minerals for the first quarter of 1946, as compared with the same period in 1945. Percentage figures were obtained by comparing actual car loadings for 1945 with estimated car loadings for 1946. Cement shows an increase in 11 of the 13 districts reporting; the Atlantic states district reports an increase of 52.1 per cent., while the Ohio Valley and Pacific Coast districts show a slight decrease. The total of all reporting districts is a 19.6 per cent. increase in cement, based on 56,909 cars in 1945 and an estimated 68,056 in 1946.

Sand, gravel and stone will increase in seven districts, decrease in five, and remain the same as last year in one district. Reporting decided increases are the Northwest district with 56.8 per cent., Trans-Missouri-Kansas with 20.5 per cent., Central Western with 17.1 per cent., and the Pacific Northwest district with a 31.8 per cent. increase. The Pacific Coast territory indicates a 13 per cent. decrease. A total increase of 1.2 per cent. for sand, gravel, and stone is figured on 239,074 cars in 1945 and an estimated 242,058 in the first quarter of 1946.

The New England district reports a 20 per cent. increase and the Southeast a 12 per cent. increase in lime and plaster car loadings. The following districts reported decreases. Allegheny 17.8 per cent., Mid-West 13 per cent., Central Western 14.8 per cent., Pacific Coast 12.6 per cent., and Pacific Northwest 13 per cent. Lime and plaster show an over-all decrease of .6 per cent., with 28,336 cars in the first quarter of 1945 and an estimated 28,171 cars during the same period this year.

## Bureau Reports 1944 Output of Crushed Stone

The output of crushed and broken stone in the United States in 1944, as reported by producers to the Bureau of Mines, United States Department of the Interior, totaled 154,960,960 short tons, valued at $160,787,341, a decrease of 9 per cent. in quantity and 6 per cent. in value compared with 1943. Included in this total is stone sold or used for concrete aggregates, railroad ballast, metallurgical use (flux), agricultural limestone, refractory stone, riprap, limestone sand, alkali works, calcium carbide works, sugar and glass factories, paper mills, and in various other chemical and manufacturing processes.

Crushed and broken stone used for concrete aggregates and railroad ballast—83,080,550 short tons valued at $78,701,175—constituted 54 per cent. of the industry in 1944.

Crushed stone for metallurgical purposes (31,080,330 short tons, valued at $25,130,113), which use ranks next to concrete aggregates in quantity consumed, decreased 2 per cent. in quantity and increased 3 per cent. in value. Limestone for agricultural purposes (18,941,220 short tons valued at $25,316,219) increased 30 per cent. in quantity and 33 per cent. in value. Refractory stone (ganister, mica schist, dolomite, and soapstone) amounted to 2,313,640 short tons, valued at $3,922,238, a decrease of 15 per cent. in quantity and 14 per cent. in value. Limestone constituted 74 per cent. of all crushed and broken stone (excluding that used for making cement and lime) sold or used by producers in the United States in 1944.

**Complete but condensed information on nonmetallic minerals production is contained in the statistics chapter of the Pit and Quarry Handbook.**

# THE LIME PLANT OPERATOR

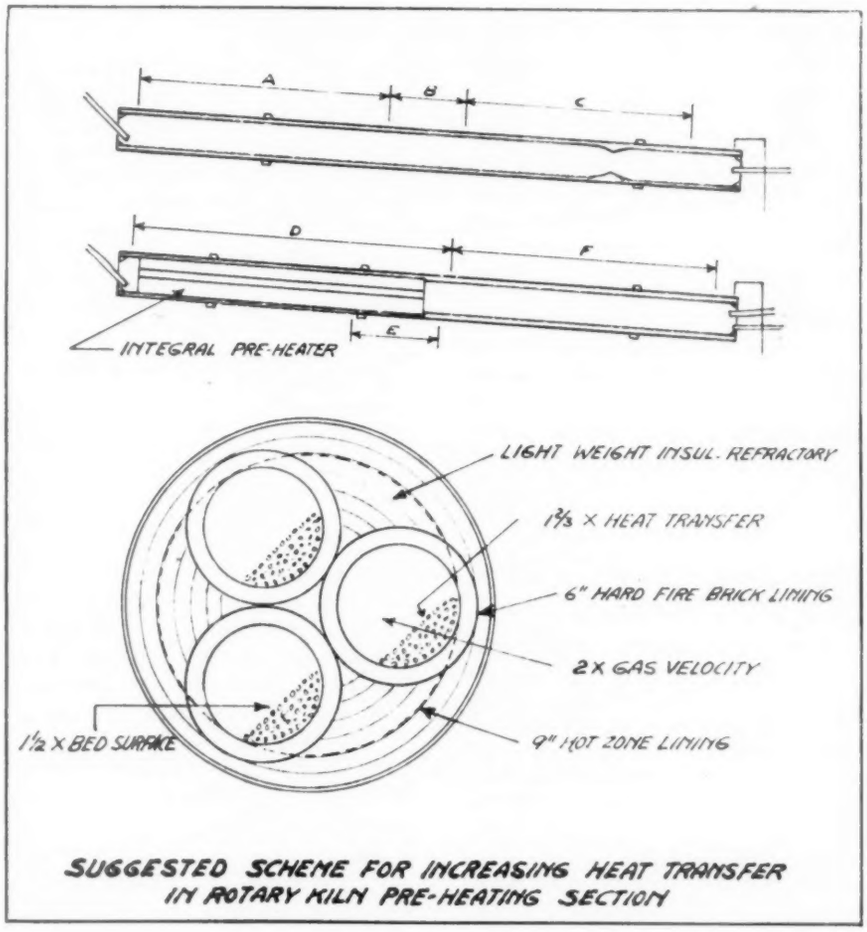
## BY WOLF G. BAUER

## CONDITIONS OF HEAT TRANSFER IN DIFFERENT LIME KILNS (PART I)

Wolf G. Bauer

UNDER the guise of this rather unassuming title, we shall occupy ourselves with many facts and conditions that have given rise to much debate and conjecture among our operators. In the preceding articles, the discussions took up some theoretical as well as economical aspects of heat application to limestone. In the following pages we shall look critically at relative heat transmission factors as they commonly occur in different type kilns. Aside from the rotary and vertical gas-fired kilns, a few of the older and newer types will also be briefly discussed. It will be our policy to treat the different kilns and burning operations on a running comparison basis, as it is best to consider all calcination practice as fundamentally the same, namely as bringing controlled heat to broken stone for controlled periods of time. As long as we consider lime burning from this basic standpoint, the specific mysteries around many types of lime burning equipment resolve themselves simply into mechanical ingenuity of devising means to attain conditions of controlled heat distribution and flow rates of gases and crushed ore.

Here the writer would like to ask the readers' permission, for a moment, to digress into a somewhat delicate subject. We are now, whether we like it or not, beginning to get thoroughly involved in the long-standing arguments over the relative merits, disadvantages and future of the rotary *versus* the shaft kiln. At this point it may be only fair to mention, however, that the editors of PIT AND QUARRY should be considered merely as innocent bystanders, offering only the facilities of expression through the pages of this department to those who wish to carry a torch from their pet kiln fires into the limelight of open discussion. Lest he be considered extremist and partial, the writer wishes to assure his readers that he will not stoop to the oft-heard contemptuous outbreaks of the rotary kiln fireman who looks with pity at his sweating "pot-kiln" contemporaries breaking down a hung kiln for a measly 25 or 50 tons of lime per day, nor to the smug complacency of the shaft kiln operator sniffing at 3:1 fuel ratios, thousands of dollars worth of revolving machinery and new-fangled control gadgets, wondering why someone doesn't saw up that 200-foot shell into three kilns and stand each one up on end the way a lime kiln was supposed to be standing. But all joking aside, we should be glad that in the plants as well as among the engineering fraternity, the issue is anything but dead, for these differences of opinion lead to competitive show-how and know-how that will eventually give birth to calcination




SUGGESTED SCHEME FOR INCREASING HEAT TRANSFER IN ROTARY KILN PRE-HEATING SECTION

A—Pre-Heat Zone, Gases Stratified, Velocity and Stone Surface Low, Unburned Gases
B—Zone of Low Heat Transfer Rate, Gases and Stone Same Temperature
C—Calcination Zone, Short Flame and High Velocity Single Burner Causes End Cooling, Ring
D—Mixed, Turbulent and Higher Velocity Gases, Increased Stone Surface
E—Secondary Gas Mixing and Burning Section Shortens Idle Zone
F—Longer and Better Controlled Hot Zone, Low Velocity Luminous Flame Firing

equipment that is up to the general process-engineering standard of our times.

**Rotary Kiln** Advantages of the rotary kiln rest in the ease of utilizing any type of fuel, high capacity per unit with low labor charge, and utilization of a large range of small sizes of stone. Disadvantages are counted chiefly as high initial cost of complete installation and lower thermal efficiencies. Higher fuel ratios are being obtained in a few instances by applying shaft kiln principles of preheating stone and cooling lime in forced-convection type heat exchangers, but again with additional investment charges.

**Shaft Kiln** Advantages of the modern gas-fired shaft kiln lie in its inherent ability to recover much more sensible heat in gases and solids above and below the calcining zone, and the fact that first cost is lower for the small and medium size plant. Its disadvantages are primarily in limited output below 100 tons per day per unit, the fact that oil and the cheaper grades of non-coking coals are difficult to apply, that it is much more difficult to burn different sizes of stone successively in the same unit, that small stone sizes have greatly limited output of present units, and that duplication and multiple arrangements of kilns and heat generators for increased plant capacity have increased labor costs more than those of equivalent output increases at rotary installations.

**Comparisons** From these primary comparisons, and there are many more that could be made, it seems much more probable that the elimination of the drawbacks and shortcomings of the rotary will be more difficult and less drastic than those possible with the shaft kiln. Positive control of gas flow and stone flow in vertical columns of larger cross-sections is a matter only of engineering ingenuity, and not of thermal or process restrictions. Greatly increased output of vertical blast furnaces, cupolas, gas producers, etc. have been achieved with resulting benefits. We will, without question, evolve continuous-process calcination machines in the next ten years that will utilize forced-convection heat exchange for highest thermal efficiencies. Such kilns will equal rotary kiln outputs per unit with full automatic control and small-stone size utilization, and will be of low initial cost.

Now that we have aired our views without going into details of statistical and theoretical data to substantiate them, we can settle back to discuss some of the present calcining equipment in a more thorough and rational manner.

## Conditions in Rotary Kilns

As much as one-half of the heat developed by combustion of the fuel may be absorbed by radiation. To obtain high transfer rates, flames must either be of high temperature or be luminous, and lime must present large surfaces and be of relatively low temperatures. In a rotary kiln the combustion chamber is large, and radiant waves find few obstructions. The standard rotary used by the industry shows little difference from its original parent design, the rotary cement kiln. In the latter, high flame and kiln temperatures are developed not only for reasons of thermal efficiency, but also because the process of sintering requires it.

**Luminosity** For lime burning, temperatures should be low, yet efficiency high. This means that we must substitute luminosity for high flame temperature. It also requires the utilization of as much kiln and lime-bed space for this purpose as possible, since the burning with luminous flames is slower and requires more room and time. As an example, luminous-flame firing in an open-hearth steel furnace was found by investigators to reach a heat transfer rate of 55 B.t.u./sq. ft. deg. temp. diff./hr., whereas non-luminous flame firing rated only 10 B.t.u. Even when the temperatures of such luminous flames are several hundred degrees lower than non-luminous flames, their effectiveness is still considerably higher.

This degree of luminosity depends a good deal on the type of fuel used. High-volatile coals, pitch, or raw producer gas, for instance, are more readily adjusted to bright flames than natural gas, coke, or oil, although some degree of luminosity can be achieved with all by correct burner design. Low degree of turbulency and laminar, low velocity flow of fuel and combustion air are necessary. The proportion of primary air or air-fuel ratio of the mixture issuing from the burners has considerable effect.

**Radiant Heat** In order to cover the greatest possible lime surface with radiant heat, we have recourse to both design and operation. For original design, the radiant-heating section of the rotary ought to be of large diameter in order to produce low gas velocity for luminous flame production and retention, and bring about a wider bed surface of material without deepening it unduly. Discharge constrictions are also of some help in cases where the lime is not too sensitive to attrition under deep bed conditions. Radiant heat transfer can also be enhanced by burner arrangement and air control.

**Heat Transfer** The rate of heating of stone and lime from the initial calcining zone to the feed end increases constantly. This might lead us to believe that heat transfer is most efficient in the cooler part of the kiln. However, the increasing rate of heat transfer toward the feed end is due to the increasing temperature difference between gases and stone, and is not a result of efficient gas—solid contacting. In fact, progressive temperature measurements of the kiln gases toward the feed end usually show a gradual decreasing rate of heat absorption, or a flattening of the gas temperature curve. This is due to two conditions, intermittent exposure of only part of the stone to the hot gases, and actual contact of only a very small layer of the hot gases with the exposed stone surface. Gas analyses from different cross-section points in the preheating zones of rotary kilns indicate very pronounced stratification of exhaust gases. This explains our second point, namely, that the hot gases flowing in the upper and opposite-to-stone part of the kiln cross-section do not scrub the exposed stone bed surface, but lose a small fraction of their heat only to the lining and by diffusion to the cooler gases immediately above the bed surface.

**Intermittent Exposure** The first point, namely that of intermittent exposure, is not the only serious shortcoming of the rotary in either preheating or calcining section. There is also a continuous blanketing of gas contact and of radiant heat emission by a certain portion of the rolling particles. If the stone size range is relatively wide, the smallest particles sift through the spaces between the larger ones. The peculiar action of the cascading material is not one of uniform mixing, but rather one of continuous segregation, causing the coarser sizes to cover and shield the smaller sizes. This action will be discussed in more detail in a later issue dealing with the movement of stone and lime in various kilns. Results of this tendency are uneven heat-treatment and calcination rates for different sizes of the material. The obvious remedy, without considering operational economics, lies in using closely-graded sizes, high rotational speed, and shal-

WE make these surveys right along, and they result in a common-sense plan to assure correct application of the right lubricants. Briefly, this is what the Shell Lubrication Engineer will provide:

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Right here we ought to warn you that the Shell Lubrication Engineer isn't going to tell you everything you're doing is wrong—he may, in fact, find very little fault with the lubricants and procedure you are now using.

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low load or bed depth. This can be accomplished economically only when efficient preheaters and coolers allow higher throughout rates or forward speed of material in the kiln, and where, consequently, the hot zone or calcining section can be lengthened to develop luminous-flame heat transfer throughout most of the kiln length.

**Gas Stratification** Our second point, that of gas stratification, is much more difficult to correct. In the burning section conditions of gas flow are naturally more turbulent due to fuel and air introduction from several points, and at different velocities and directions. This turbulent condition can be varied by burner, hood, and secondary air control arrangement. When the particular kiln operation produces considerable ring formation, further gas flow disturbances are set up near this constriction. Generally, however, past this point and on into the preheating zone, gases flow out with little mixing.

**Preheaters and Coolers** If direct-gas-contact stone preheaters and lime coolers are attached to the kiln, then additional gas mixing is of benefit only when it serves the purpose of completing the delayed combustion process of luminous flame burning in the middle and last section of the kiln, thereby bringing together the last remaining traces of uncombined oxygen, monoxide, and hydrocarbons. If the kiln has no separate stone preheater, gas and stone contact must be improved by higher gas velocities and longer contact time. Time can be increased only by lengthening the kiln preheating section, as has been attempted in many of the newer kilns, or by increasing the material volume which, however, does not increase exposed stone surface proportionally. Gas velocity, and therefore heat transfer, can be increased by kiln construction. To increase heat transfer by this means requires the stone surface to be increased likewise. This would call for a radical departure in present kiln-lining design. It may be acccomplished by dividing this kiln section into three or more refractory, parallel, adjacent cylindrical compartments, each of smaller diameter than the kiln diameter, and positioned within the original steel shell of the kiln. The effect would be somewhat analogous to that achieved by the more common partitioning method used in rotary coolers for the purpose of thinning out the material stream and presenting greater surface exposure to gas flow. In the case of the kiln, the free cross-section would be much more restricted due to the thickness of the refractory construction, thereby increasing gas velocity in this section. This part of the kiln would then have to be strengthened and stiffened, and supported by an extra tire in order to carry the additional load of the added brickwork. Somewhat more power would be required for draft and kiln rotation, but not as much as would be needed in vertically-disposed preheaters in which gases are pulled through the stone bed. (See illustration).

What holds true for conditions prevailing in the preheating zone of rotary kilns equally applies for conditions of heat exchange in the rotary cooler. The obvious and also much simpler correction here is a direct-contact cooler in which cold air is blown through a bed of hot lime. We will have more to say about such coolers and preheaters in a later issue.

It should be understood, of course, that heat transfer by conduction plays a minor role also, and that this role affects more directly the buried material in the preheating section than that in the hot zone. The position of the buried lime in the hot zone can be likened to that in a radiant muffle in which the heat is reflected from the lining up. Such heat transfer is present in only a minor degree by conduction flow between lining and buried stone in the preheating section of the rotary. Under ordinary conditions, heat flow by radiation from the lining to the buried material is approximately one third of that from the flame on the surface, i.e. in the hottest section of the kiln. This ratio quickly drops off, however, toward the feed end, where only a relatively small amount is transmitted from the hotter lining to the buried stone by conduction alone.

## Ohio Station Conducts Liming Materials Tests

During the last four decades, the Ohio Agricultural Experiment Station has conducted laboratory and greenhouse investigations and numerous long-time field experiments on the value of various liming materials in correcting acidity and increasing crop producton on the major soil types of Ohio. This research program has provided the following information, which has been abstracted from a paper, by Dr. R. E. Yoder of the Ohio Agricultural Experiment Station.

Any Agricultural liming material must dissolve in the soil before it is effective as a neutralizer of soil acidity and before its chemical constituents can become available as mineral nutrients for crop plants. The total neutralizing power of a liming material is simply a measure of the chemical composition of the materials, its degree of purity and hence its potential capacity to neutralize soil acidity when the material is dissolved. The rate of solution of a liming material in an acid soil is determined primarily by the degree of fineness of the materal. Degree of fineness, therefore, is the quality factor that largely determines the efficiency of a given liming material in correcting soil acidity.

In addition to oxides, hydrates, and silicates of lime, the Ohio Liming Materials Law recognizes the following five grades of agricultural limestone:

| Grade | % of the Material Passing Through a 100-mesh Sieve | Approximate 4-year Efficiency |
|---|---|---|
| Agricultural Screenings | Less than 20% | 0.4 or less |
| Agr. Limestone Meal | | |
| Coarse meals | 20—29% | 0.5—0.6 |
| Fine meals | 30—39% | 0.6—0.7 |
| Agr. Ground Limestone | 40—59% | 0.7—0.8 |
| Agr. Pulverized Limestone | 60—79% | 0.9—0.95 |
| Agr. Superfine Limestone | 80% or more | 0.95 or greater |

The slight relative increase in efficiency of the coarser liming materials after time intervals greater than four years is of little or no practical importance. The efficiency of blast furnace slags is approximately that of limestone of comparable fineness. When highly acid soils are limed for the first time, there is some advantage in applying the lime on plowed land and incorporating it somewhat during the final seed-bed preparation. Dividing the lime application between the several crops in the rotation is unnecessary, costly, burdensome and relatively unprofitable. There is no evidence to support the practice of small, frequent applications of lime.

Limestone is quarried in all the provinces of Canada except Prince Edward Island and Saskatchewan, with the greatest amount coming from Ontario and Quebec. The 1943 production of limestone for all purposes, including the manufacture of lime and cement, constituted about 90 per cent. of the total production of Canadian stone. According to figures compiled by the Dominion Bureau of Statistics, limestone production in Canada was increased during the war years, advancing from 4,150,000 tons in 1939, to 6,265,000 tons in 1943.

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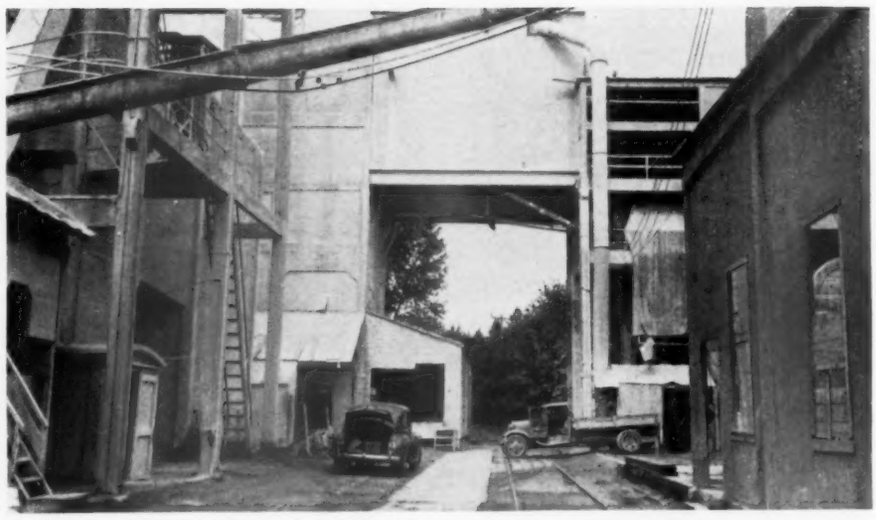
# AGSTONE, LIMESTONE FLOUR PRODUCED BY OREGON CEMENT CONCERN

By HARRY F. UTLEY

another ON THE SPOT report

FOR more than a year now the Oswego, Oregon, plant of the Oregon Portland Cement Company has been producing agricultural limestone and limestone flour in a special department of the cement plant. Because of the high quality of the product (the stone far exceeding A.A.A. specifications both for fineness and calcium-carbonate content) the company has been unable to keep pace with the demand and is considering an early increase in productive capacity. Present output is in the neighborhood of 10 tons per hour, about 65 per cent. being agstone and the remainder flour. The special grinding department has been engaged exclusively in this production since starting operations in September, 1944.



The structure in the background houses the new grinding department of the Oregon Portland Cement Co., at Oswego, Oregon.

The Oswego plant, one of two portland-cement manufacturing plants operated by the company, is situated on the Willamette River a few miles below Portland. There is no quarry at the plant, the raw material being shipped by railway from two sources . . . the cement rock being quarried at Dallas, Oregon, 60 miles distant, and the high-calcium stone coming from Oregon's other cement plant at Lime, nearly 400 miles to the east. It is the last-named stone, analyzing 95 to 98 per cent. $CaO_2$, that is utilized in the new grinding department, being withdrawn from the bins which serve the raw-grinding mill of the cement plant.

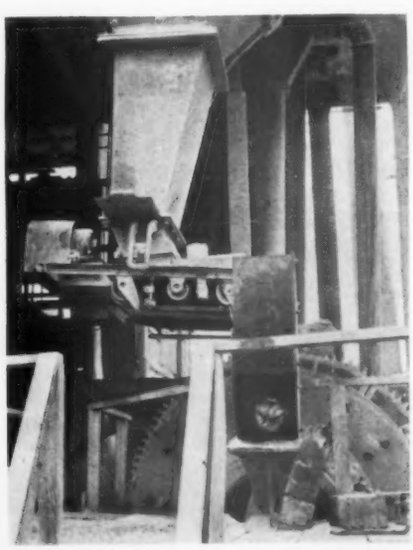
After being reduced to minus-3½ inches in a Telsmith No. 20 cone crusher, the stone is further reduced to minus-⅝-inch in a Jeffrey hammer-mill, and is then transported by belt-conveyor and elevator to overhead bins in the stone department.

Production of the finely-ground stone is accomplished in a Hardinge installation consisting of a 7-foot by 48-inch conical ball-mill and a reverse-current air classifying system in closed circuit with the mill. A Hardinge constant-weight feeder regulates the amount of minus-⅝-inch stone fed to the mill and peak efficiency is maintained constantly by Hardinge "electric ears" which microphonically control the mill feed. A No. 19 Clarage fan operates the air classifier.

The finished, ground stone is stored in two overhead loading bins, one of these supplying a St. Regis 2-spout packer which bags some of the product.

The agricultural stone has a minimum $CaCO_3$ content of 95 per cent. and a maximum of 4 per cent. $MgCO_3$. A typical fineness analysis is: 99.5 per cent. passing 10 mesh, 65 per cent. passing 50 mesh, and 50 per cent. passing 100 mesh. The flour, somewhat finer, analyzes: 99.5 per cent. passing 10 mesh, 95 per cent. passing 50 mesh, 85 per cent. passing 100 mesh.

The superintendent of the Oswego cement plant, H. R. Shipley, also supervises production of the new grinding department.



Left: the 7-ft. by 48-in. conical mill and drive gear; center: the conical mill from the feed end, with constant-weight feeder above; right: microphones or "electric ears" which control the feed by "listening" to the noise of the conical mill.

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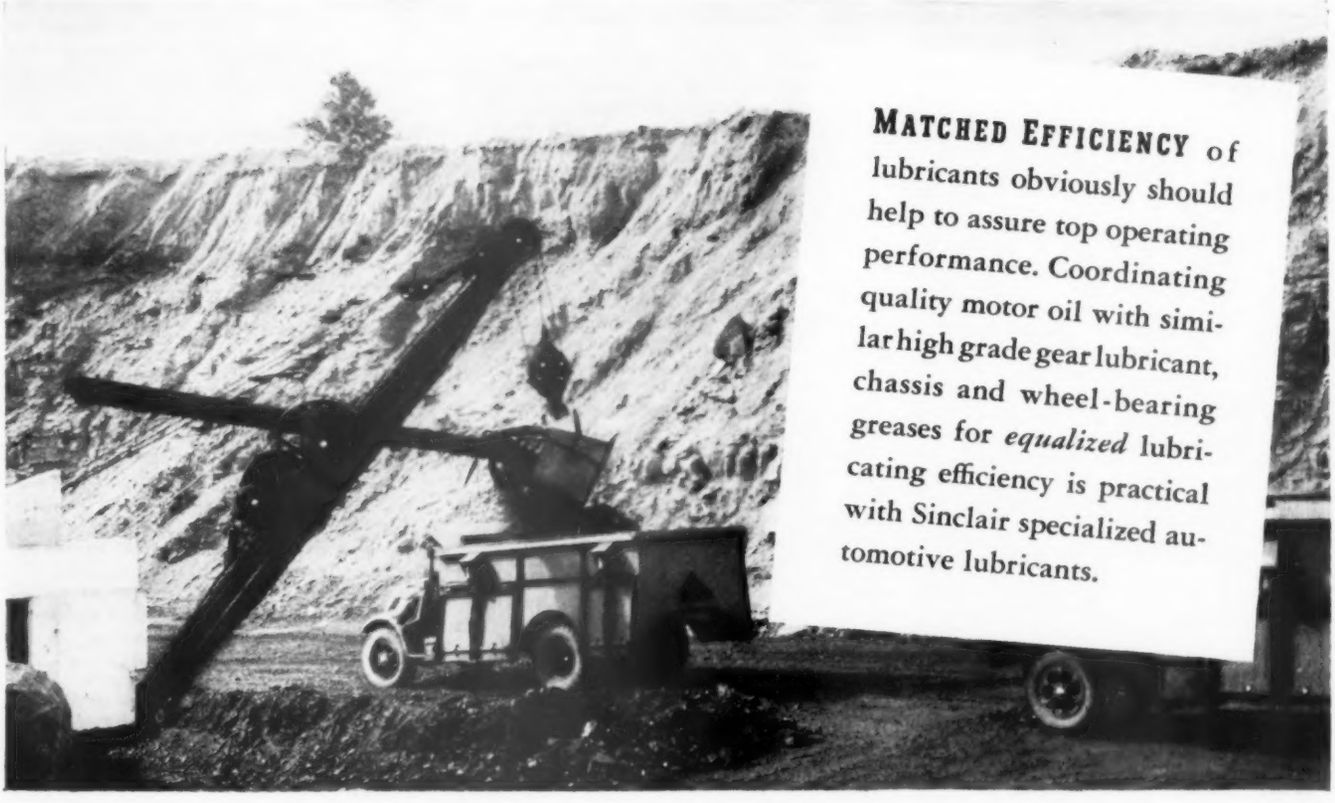

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# PERSONAL MENTION

J. Bryan Oldham

J. Bryan Oldham was recently named vice-president and manager of the Texas Division of the Lone Star Cement Corporation. The Dallas and Houston plants will be under his supervision. Mr. Oldham, who was formerly general sales manager of the company in New York City, succeeds Lewis R. Ferguson. Mr. Ferguson, although retired from active service, will continue his association with the firm in an advisory capacity.

Mr. Oldham was a field engineer for the Portland Cement Association from 1921 to 1924, after which he joined Lone Star. He became vice-president and manager of the Dallas branch 17 years ago.

Marie Terwilliger of the National Gypsum Company's Newburgh, New York, plant, who is the firm's only woman safety supervisor, recently was elected vice chairman of the Newburgh safety council. In connection with this work, Miss Terwilliger has been giving short broadcasts over Newburgh's radio station in the interest of safety.

In the programs, for which Miss Terwilliger prepares the script, attention is called to the importance of safety precautions in the home by drawing comparisons between the foreman in the shop and the home "foreman," the housewife. Miss Terwilliger developed the idea for the broadcast series while conducting a study of accident statistics.

Arthur S. Knoizen, who served as a member of the War Production Board during the war, resigned on October 5 as director of that agency's Mining Division. Mr. Knoizen, who had previously been associated with the Joy Manufacturing Company, was in charge of providing mines with adequate equipment and supplies during the change-over period from the Production Requirements Plan to the Controlled Materials Plan. He returns to Joy to resume his former duties.

Walter R. Macatee, formerly a special representative for the Asphalt Institute in Washington, D. C., has been named manager of the American Road Builders Association's Airport Division. Mr. Macatee was also associated in earlier years with the Edison Portland Cement Company and the Asphalt Division of the Texas Company. He is a member of the Association of Asphalt Paving Technologists and the Society of Military Engineers.

Lewis R. Sanderson and E. H. Van Duzee recently received appointments to new positions with the National Gypsum Company. Mr. Sanderson, formerly manager of the Bluebonnet Ordnance plant in Texas, became director of construction and reconversion. Mr. Van Duzee will supervise the planning and co-ordinating of merchandising activities.

Chief Engineer C. S. McMullen, of the Virginia State Highway Commission, was elected president of the Southeastern Association of State Highway Officials at its annual convention December 3-4 in Atlanta, Georgia. He succeeds Ernest L. Bailey, West Virginia highway commissioner. George T. McDonald, engineer-director of the Georgia State Highway Department, was elected vice-president, succeeding G. R. Swift, Alabama highway director.

Walter J. Skelly, who has for 25 years represented the Indiana Limestone Company in Canada, returned to the company after having served in Wartime Housing, Ltd., of Toronto during the war years. Mr. Skelly will have temporary quarters at his home in Toronto.

Joseph A. Neubauer has been named technical adviser to the Columbia Chemical Division, Pittsburgh Plate Glass Company, with headquarters in Pittsburgh. Mr. Neubauer recently returned from a three-month tour through Germany for the technical and industrial intelligence committee of the Foreign Economic Administration.

L. J. Wheeler, formerly superintendent of the Lone Star Cement Corporation's Houston plant, was recently appointed general superintendent of the firm's plants at Bonner Springs, Kans., Dallas and Houston. He succeeds William Moeller. Mr. Wheeler has been with Lone Star for 20 years.

Gordon E. Riley has resigned from his position as general traffic manager of the United States Gypsum Company to become traffic head for the Radio Corporation of America, with headquarters in Camden, N. J. R. C. Berrey has been promoted to assistant general traffic manager at U.S. Gypsum.

Norman A. Bialy recently became general sales manager of all building products for the National Gypsum Company; Amos B. Miner is now manager of the Industrial Sales Division; and Frank E. Shull heads the gypsum and building lime sales. Headquarters of all three men will be at Buffalo.

N. A. Bialy

A. B. Miner

Mr. Bialy has been with the company for 11 years. Mr. Miner joined the Universal Gypsum & Lime Company in 1932. When National absorbed Universal, Mr. Miner continued his duties until his recent promotion. Mr. Shull has been a National salesman and also district manager at Birmingham.

## OBITUARY

Dr. S. A. Trengove

Dr. Stanley A. Trengove, 47, editor of *Mining Congress Journal*, died on December 28 in Washington, D. C. after a brief illness.

Dr. Trengove had been editor since March 1, 1944, and had previously been chairman of the Department of Mining Engineering, Missouri School of Mines, Rolla, Missouri. Prior to that time he had served as production engineer, assistant district superintendent for the Oliver Iron Mining Company. He was for several years on the faculty of the Minnesota School of Mines and Metallurgy, and is the author of various papers on mining practice and advances in mining technology, drilling and blasting, mechanical loading and haulage, ventilation, mine safety and related subjects.

Howard F. Wierum, 73, internationally known mica expert, died on December 31 at his home in Canaan, N. H. Mr. Wierum was one of the first members of the National Defense Council and later became technical consultant and chief of the Mica Graphite Division of the War Production Board. He held the latter position at the time of his resignation from government service in July, 1945.

Sir Archibald Mitchelson, 67, who died on December 30, 1945, at Coombe Hill, Surrey, England, was one of the founders of the Alpha Cement Company. At the time of his death, Sir Archibald, who began his business career as an office boy, was a chairman of 18 industrial companies.

Charles P. Reidy, 66, a retired chief electrical and steam engineer of the Universal Atlas Cement Company, died on December 28, 1945, at Allentown, Pennsylvania. Mr. Reidy had retired from his position with Universal in 1943, after 39 years of active service.

Theodore Mallory Stuart, 60, former president of the Yosemite Portland Cement Co. and an attorney, died on January 15 at a San Francisco hospital.

A native of Iowa, Mr. Stuart received a law degree at the University of Michigan. He served as a captain during World War I.

Harvey M. Merriman, a salesman for the Coplay Cement Manufacturing Company of New York, died of a heart attack on October 24 while driving his car near Ossining, New York. Mr. Merriman was 58 years of age. His residence was in White Plains, New York.

Thomas L. Cave, 70, formerly a plant superintendent for the Buffalo Crushed Stone Corporation, died recently in Buffalo after a long illness. He had been retired from work for more than five years because of ill health.

# Legal Decisions

By LEO T. PARKER

Very frequently non-metallic-mineral producers waste a great deal of time, effort, expense, and inconvenience in defending *unnecessary* law suits. Many legal controversies may be easily avoided if the litigants are familiar with the modern law. In other instances, of course, knowledge of the prior higher court decisions will assist readers to win unavoidable suits. Clip these higher court decisions for future reference.

## Technicalities Lose Suit

Many employers lose important law suits, through their failure to comply with state laws, when appealing to the higher court.

For example, in *Gednalski v. Dell Rapids Quarry Company,* 20 N. W. (2d) 226, reported December, 1945, it was shown that the lower court held the company liable in damages for injuries sustained by an employee. The company appealed to the higher courts on the grounds that the employee was injured because he was contributorily negligent, and, also, that the evidence was insufficient to sustain the amount of damages awarded by the jury. However, the counsel for the company did *not* comply fully with state laws relating to the grounds for granting a new trial.

Therefore, the higher court approved the verdict rendered by the lower court, saying:

"A noncompliance with the statutory provisions precludes a review by this court of the questions tendered by appellant's (quarry company's) brief. Upon the record here presented the judgment appealed from must be and is affirmed."

## General Contractor Liable

Modern higher courts consistently hold that a general contractor is personally liable in damages for the failure or breach of any construction contract undertaken by his subcontractors.

For instance, in *Schultz v. Gund,* 19 So. (2d) 682, reported 1945, it was shown that a subcontractor failed to complete his contract. The property owner sued the general contractor for damages amounting to $832. The latter contended that the suit should have been filed against the subcontractor. However, the higher court held the general contractor personally liable, and said:

"We can not see any force whatever in this contention. The fact that he (general contractor) permitted the architect to deal directly with the subcontractor is unavailing to him as a defense."

## Not Independent Contractor

Considerable discussion has arisen from time to time over the legal question: When is a person an independent contractor for which a company is not required to pay unemployment contributions, social security taxes, workmen's compensation, etc., and therefore no company liability arises from injuries to the employe?

Obviously, if a person is paid on a contract basis, and may do his work when and where *he* pleases, he is an independent contractor. However, an employee who works on the company's premises and is subject to control by the


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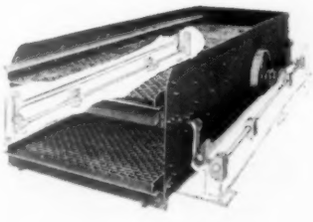

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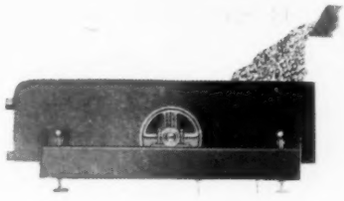

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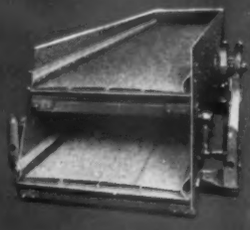
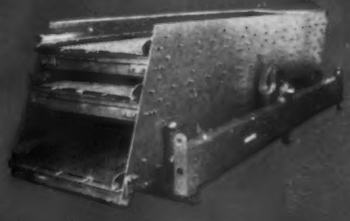


DOUBLE DECK



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A convenient and practical way to ascertain whether manganese steel chain will save you money is to inspect the elevator and conveyor chain in your plant. Where you find weak links which will soon need replacement, order Amsco manganese steel links to replace them. Amsco chain ganese steel links with those you have been using, you can accurately determine which are lowest in ultimate cost. This experiment is well worth while, as it has pointed the way to substantial reductions in chain costs in steel plants, mines, cement, lumber and pulp mills, quarries and in general industry.

One reason for the superior performance of Amsco chain is found in the properties of austenitic manganese steel. Presenting a test-bar tensile strength of 125,000 lbs. p.s.i. (average test) and a developed-in-service surface hardness up to 550 Brinell, combined with a ductile, shock-resistant body metal, Amsco chains withstand for long periods abuse that quickly destroys chains of ordinary metals.

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company's officials is *not* an independent contractor irrespective of wording in the contract of employment.

For example, in *Empire Star Company v. California Employment Commission*, 158 Pac. (2d) 606, reported July, 1945, it was shown that a company owning valuable deposits leased its land to different operators who extracted material from the deposits strictly on a 50 per cent. commission basis. Under the term of the leases each lessee was to furnish all the necessary labor. The company furnished all the tools and equipment except the explosives and fuse. Also, an important clause in the lease contract gave the company the right to demand that the lessee discharge any employee designated by the company as objectionable.

The question presented the higher court was whether the company must pay unemployment compensation on the men employed by these lessees. The higher court held in the affirmative mainly because the company controlled the operations of the lessees to the extent that the company officials could have any lessee discharge men in his employ. This court said:

"Unless the so-called independent contractor definitely is engaged in an independent calling, the mere pen and paper subtraction of the right of control of the means and methods of his operations should not be countenanced as a method of taking the relationship out of the employer-employee classification."

Also, see the leading case of *Vensavage*, 2 Cir., 218 F. 547, 552. In this case an injured employee sought compensation from a company, although at the time of the accident he was employed by another person who was in the employ of the company. The company contended that the injured employee was not in its employ and that, therefore, it could not be held liable. In holding the company liable this higher court explained that it is absurd to class such a person as an independent contractor, because he has no capital, no financial responsibility and is under the direct control of the company.

## Employee Was Ill

According to a late higher court decision, an employee who has a disease cannot recover compensation without definite proof that his disability was caused by his employment.

For illustration, in *Gleary Brothers Construction Company v. Nobles*, 23 So. (2d) 525, reported December, 1945, it was shown that an employee named Nobles, worked regularly for a contracting company. While engaged in unloading a railroad box car containing cement he collapsed and fell dead. His dependents sued to recover compensation under the State Workmen's Compensation Act. The lower court allowed compensation, although the testimony proved that Nobles was suffering from a kidney disease and various heart involvements. The higher court refused to allow compensation because no *definite* proof was given that the work Nobles was doing or had done contributed to his death.

## Government Cancelled Contracts

Notwithstanding the fact that a contract provides that the purchaser may cancel the contract "at any time" a higher court recently held that if the purchaser fails to cancel the contract within a "reasonable" time the purchaser is obligated to comply with its terms.

For illustration, in *Sylvan Crest Sand & Gravel Company v. United States*, 150 Fed. (2d) 642, reported November, 1945, it was shown that the gravel company owned and operated a trap rock quarry, Through the Treasury Department, acting by its State Procurement Office in Connecticut, the United States invited bids on trap rock needed for the Mollison Airport at Bridgeport. The company submitted four bids for different sized screenings of trap rock and each bid was accepted by the Assistant State Procurement Officer. Each contract contained a clause that the government could cancel the contract "at any time". Later these contracts were cancelled and the company sued the United States Government for $10,000, the profits it would have earned had the government not cancelled these contracts. Although the lower court held the government not liable the higher court reversed the verdict and said:

"No one can read the document as a whole without concluding that the parties intended a contract to result from the bid and the government's acceptance. If the United States did not so intend, it certainly set a skillful trap for unwary bidders. . . . We believe that the reasonable interpretation of the document is as follows: 'We accept your offer to deliver within a reasonable time, and we promise to take the rock and pay the price unless we give you notice of cancellation within a reasonable time.' "

## What Is Compensation?

Considerable discussion has arisen over the question: If state laws prohibit the dependents of an employee, killed in the course of his employment, from receiving compensation under the State Workmen's Compensation Act, can a funeral director receive his payment for funeral service from the Industrial Commission? According to a late higher court decision all laws relating to compensation payments must be broadly and liberally construed, and although dependents of a deceased employee can not recover compensation the funeral director may receive full payment.

For illustration, in *Rothoff v. Industrial Commission*, 58 N. E. (2d) 956, reported 1945, the question presented the court was whether the State Industrial Commission has jurisdiction to pay funeral expenses of a deceased employee whose death results from an injury sustained in the course and arising out of his employment. This higher court promptly held that the Industrial Commission has jurisdiction to pay funeral expenses of a deceased workman or employee in such a case. An important point of this decision was the fact that the employee died more than eight years after the occurrence of the injury. This court said:

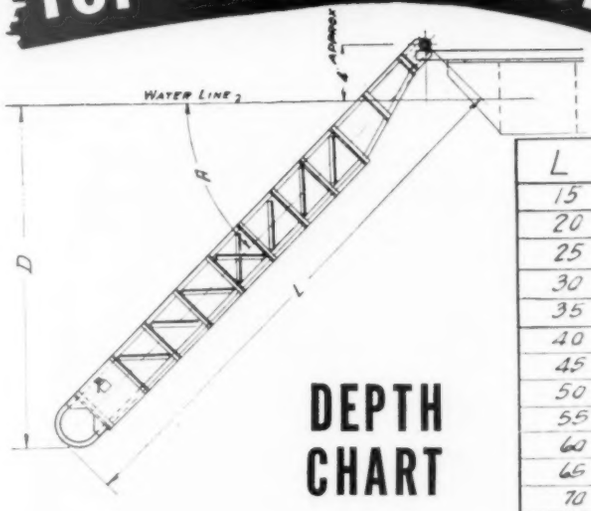
"The authority conferred by the state constitution is very broad and comprehensive. Under the power thus conferred, the General Assembly clearly has authority not only to designate the conditions upon which payments are to be made from the fund as well as the limitation of time therefor."

## Read Insurance Policies

All persons who hold insurance policies are strictly bound by the exact clauses in the policies.

For example, in *Marshall v. Maryland Company*, 189 S. W. (2d) 529, reported November, 1945, it was shown that an employee who became sick sued his employer to recover compensation under


# Dredge Lower Depths for Higher Profits....




DEPTH CHART

| L | D WHEN A = 45° | D WHEN A = 60° |
|---|---|---|
| 15 | 6.5 | 9 |
| 20 | 10 | 13 |
| 25 | 13.5 | 17.5 |
| 30 | 17 | 22 |
| 35 | 20.5 | 26 |
| 40 | 24 | 30.5 |
| 45 | 27.5 | 35 |
| 50 | 31 | 39 |
| 55 | 35 | 43.5 |
| 60 | 38.5 | 48 |
| 65 | 42 | 52 |
| 70 | 45.5 | 56.5 |
| 75 | 49 | 61 |

**In many sand and gravel deposits, the depth of dredging possible—using plain suction nozzle alone—has been reached and worked. As an article in a trade journal reaching sand and gravel producers, recently pointed out:**

**"*Some change in machinery and methods of excavating will be necessary to operate at a profit in the competition of post war markets.*"**

**Another adverse factor, always present in plain suction pipe dredging, is the uncertainty of flow of solids into the nozzle and the clogging of the system by boulders, lumps and clay and debris.**

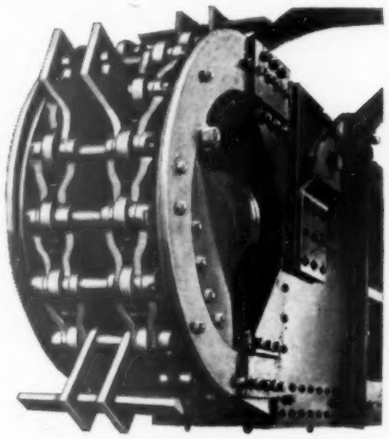
**The Eagle "Swintek" Dredging Ladder readily solves both these problems, and has made possible profitable dredging of sand and gravel at depths way beyond that attainable with plain suction pipes. (See depth chart.)**

**The digging position of the Eagle "Swintek" Ladder is adjustable in relation to the pond water level. The maximum digging depth for a given operation is determined by the length of ladder employed. The digging depths of ladders of various lengths are shown in the chart. *Best deposits usually lie at lower levels.***

**The cutters on a "Swintek" effectively loosen and tear out the material, insuring the feeding of a maximum proportion of solids into the pipe line. The traveling chain is a positive barrier against oversized solids entering the nozzle and clogging the pipe line, and eliminates costly operating delays for clearing clogged lines and pumps and untimely breakage.**

**Eagle "Swintek" Dredging Ladders have increased production as much as 400% (an actual case), and they substantially increase profits.**

**Write today for details, and a copy of new Catalog No. 745.**



***The cutters loosen deposit and insure uniform feed of solids; at the same time carrying oversize up the ladder as the endless chain passes over the nozzle, where it acts as a screen.***

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"SWINTEK" DREDGE LADDERS — SCREW WASHERS
LOG WASHERS — DEHYDRATORS — SAND TANKS
CLASSIFIERS — REVOLVING SCREENS
**EAGLE IRON WORKS**
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"SERVING INDUSTRY FOR OVER SEVENTY YEARS"

# REDUCES 30" STONE TO MINUS 1" AT THE RATE OF 100 TONS PER HR. —WITH ONLY 80 HORSE POWER

Side View of No. 3030 Crusher with detachable Reciprocating Feeder operating in McCorkle Stone Company plant, Milroy, Indiana.

HOW IT WORKS — Impacting action of the two gigantic impellers, turning in opposite directions away from each other (see arrows) strike stone in mid-air as it is fed into crusher. Material is thrown upward against grate bars and rebounds until reduced to required size. It then passes around impellers and out through discharge openings. Impellers travel at adjustable speeds of 250 to 1000 rpm. The size of finished product is easily and quickly controlled. Manganese steel impeller bars have four striking faces and may be reversed when worn.

*Write Dept. P2 for complete details.*

**Sensational results in limestone reduction are reported by the McCorkle Stone Company of Milroy, Indiana, with their recently installed New Holland Model 3030 Double Impeller Impact Crusher.**

**Handling run-of-the-quarry, feed stone ranging up to 30 inches, this New Holland machine is producing 40 tons per hour of minus 1-inch material with only 80 horsepower, and can, according to company officials, produce over 100 tons per hour.**

**In addition to increasing agstone output at least 100%, the new crusher produces such perfectly cubed material that the secondary crushers in the plant have considerably boosted capacities.**

**The New Holland unit is so flexible it can operate as a separate plant and so productive the McCorkle Stone Company is installing additional equipment to handle the increased capacity.**

## NEW HOLLAND MACHINE CO.

INDUSTRIAL DIVISION
NEW HOLLAND, PENNSYLVANIA


an insurance policy held by the employer. During the trial the employee proved that he worked in a department where he repaired motor trucks and that the motors emitted poisonous gases, vapors and fumes and contaminated and poisoned the air which he breathed. In other words, the employee claimed injury from the effect of carbon-monoxide poisoning. However, since the insurance policy held by the employer contained no clause insuring employees against "occupational" diseases the higher court held the insurance company not liable, and said:

"Suits for occupational diseases were clearly excluded and defendant had no obligation to defend them."

## Law of Carriers

Few shippers realize the chances of financial losses arising from shipment of products via motor trucks. Here is the law: If a motor transport concern is engaged in the business of regularly transporting merchandise, it is a legal common carrier. Such a carrier is liable for any and all losses or damage to the merchandise carried. On the other hand, if a carrier is *not* a common carrier it is liable for damage to the merchandise *only* when the shipper proves that the loss resulted from the negligence of the carrier's employees.

For illustration, in *Lincoln Company*, 19 N. W. (2d) 567, reported October, 1945, it was shown that a shipper instructed the owner of a motor truck (not a common carrier) to transport specific merchandise. During the transportation the merchandise was destroyed or stolen. The shipper sued the carrier for the value of it. Since the shipper *failed* to prove that the loss of the merchandise resulted from the negligence of the truck owner, the higher court held the latter not liable. This court said:

"In the present case the hauling contract was made between the consignee of the goods and a contract hauler. The loss occurred while the goods were in the legal possession of the contract hauler, without negligence on his part."

## Retail Sales

The Fair Labor Standards Act contains certain clauses which exempt "retail" sellers from complying with this law. However, according to late higher court decisions employees are exempt from the Fair Labor Standards Act under Section 13a only if their work is *directly* related to the sale of "goods" by retail.

See *Barrick v. South Chicago Dock Company*, 149 Fed. (2d) 960, reported September, 1945. In this case the testimony proved that the company sells and delivers over 75 per cent. of its products at retail. Employees engaged in loading and unloading those products from railway cars and trucks sued for back wages under the Fair Labor Standards Act.

Some of the products were reloaded from common carrier's cars, boats, etc. by the employees directly into trucks, cars and boats destined for commerce into other states.

The employer contended that he is exempt from the Federal wage-and-hour law because employers, the majority of whose business is retail, need not pay the wages specified by the law.

The higher court refused to hold the employer exempt, and said:

"This Sec. 13(a) was designed to cover persons engaged in the actual sale of commodities and does not extend to employees whose work was entirely disconnected therewith."

In other words, employees who load and unload products for interstate commerce are not in the "retail" department of the employer, and therefore, remain within the scope of the Fair Labor Standards Act.

On the other hand, employees who serve as clerks, stenographers, bookkeepers, salesmen, etc. are not within the scope of the Fair Labor Standards Act if the majority of their employer's busi-is in retail sales and deliveries.

### Brief Reviews

In *Waldie v. Steers Sand & Gravel Corporation,* 151 Fed. (2d) 129, reported November, 1945, suit was filed against the corporation, as charterer of a barge, for damages caused by the barge resting on the uneven bottom of a berth alongside a wharf, and the charterer accused the owner of the tug which delivered the barge at the wharf. This higher court held that the liability of wharfingers, consignees, or tug owners is to exercise "reasonable care." This court said further that the meaning of "reasonable care" must be determined by balancing the risks imposed upon others by not taking precautions against the cost and trouble of the precautions.

## Questions and Answers

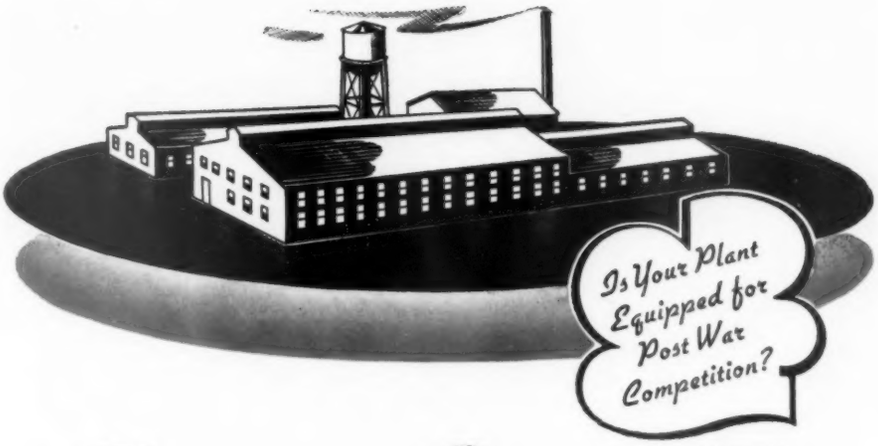
**[Mr. Parker will be glad to answer questions regarding legal problems of PIT AND QUARRY readers. Questions should be addressed to Leo T. Parker, Legal Editor, PIT AND QUARRY.—Ed.]**

*Legal Editor:* Can you give me some legal advice? I had a contract to supply concrete blocks and build a house. I did not complete the house when I said in the contract I would. Now the owner refuses to pay me. What can I do?—J. F. F.

*Answer:* It is the general rule that an ordinary person who sues to recover payment on a contract must prove that he has fully performed his part of the agreement, otherwise he is not entitled to a favorable verdict. However, this rule of law is not applicable to contracts made by contractors. Also, if the owner fails to prove that he suffered damages by a contractor's breach, the latter may recover full payment.

For example, in *Lillis v. Anderson,* 21 So. (2d) 389, reported May, 1945, the testimony proved that a contractor and a property owner entered into a written contract by the terms of which the contractor agreed to perform certain construction work. The property owner refused payment and the contractor filed suit. During the trial the owner testified that he was not satisfied with the work performed by the contractor. The higher court considered all the testimony and decided that the contractor had not completed his work exactly in accordance with the terms of the contract, but it held the contractor entitled to a full recovery because the owner failed to prove that he suffered any damages resulting from failure of the contractor to comply with the terms of the contract.

Therefore, it is quite apparent that unless the owner proves damages you can recover the full payment. But if the owner proves that he was damaged by your breach of the contract you can recover the full contract price less the amount by which the owner was damaged by the breach.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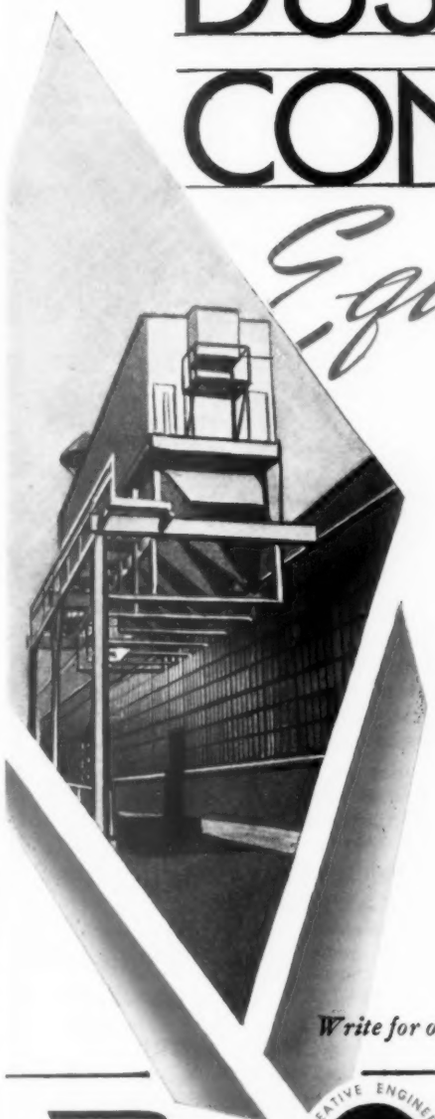

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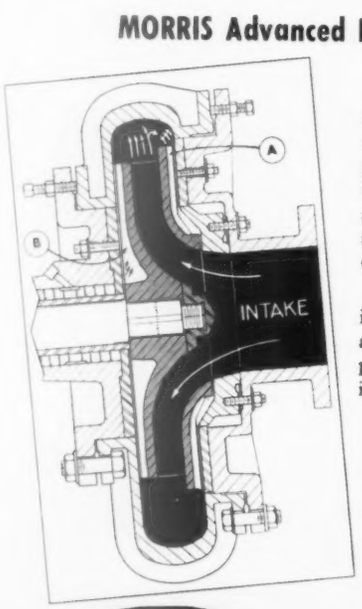


External ribs of longer diameter on the suction side of the Morris impeller—an exclusive feature—set up a higher localized pressure than exists in the pump shell (see A in diagram), reducing recirculation of abrasive solids between the impeller and the suction disc, thereby cutting down wear, eddy losses and leakage.

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# TRAFFIC News Digest

### CENTRAL FREIGHT ASSOCIATION DOCKET

**Docket 79275 (2)**—Stone, fluxing, furnace or foundry, melting or refractory (unburned), in bulk in open-top cars, carload minimum weight 90 per cent. of the marked capacity of car furnished, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Hillsville, Shaw Junction and Walford, Pa., to Cleveland, O., 99 cents per gross ton.

**Docket 79297 (2)**—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica) and gravel, carload, in open-top cars, minimum weight 90 per cent. of the marked capacity of the car, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Hugo, O., to Avon, O., 94 cents net ton.

**Docket 79302 (1)**—Sand (bank, river or torpedo) and gravel, carload minimum weight 90 per cent. of marked capacity, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Dickason Pit, Ind., to Beecher City, Ill., 124 cents per net ton.

**Docket 79304 (2)**—Clay, crude (common or fire) in bulk, minimum weight 90 per cent. of marked capacity of car used. Establish on, from Jackson, O., to New Savage, Md., 342 cents per net ton.

**Docket 79312 (2)**—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding, ground, loam, moulding-bonded—naturally or otherwise—polishing, pulverized or silica) or gravel in open-top cars. Carload minimum weight 90 per cent. of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Warsaw, Ind., to Elkhart, Ind., 88 cents per net ton.

**Docket 79313 (2)**—Slag, commercial, crushed, carload, in bulk, in open-top equipment, minimum weight 90 per cent. of marked capacity of car, except that when car is loaded to cubical or visible capacity, actual weight will apply. Establish on, from Youngstown, O., to Hallton, Pa., 165 cents per net ton.

**Docket 79315 (2)**—Sand (except sand, moulding, bonded—naturally or otherwise—and except ground or pulverized sand) and gravel, in open-top equipment, carload minimum weight as follows: Minimum weight 90 per cent. of the marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply; but orders will not be accepted for closed and open-top cars of less marked capacity, 60,000 pounds and 80,000 pounds respectively. When a shipper orders a car of above-mentioned marked capacities or greater and the carriers are unable to furnish car ordered and furnish a car of greater capacity than that ordered, the minimum weight of the car furnished will be that which would have obtained had the car ordered been furnished and used. Establish on, from

McKeesport, Pa., to Marion Center, Pa., 132 cents per net ton.

**Docket 79316 (2)**—Crushed stone and screenings, including crushed limestone and limestone screenings, in open-top cars, carload minimum weight 90 per cent. of the marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Hallton, Pa., from Hillsville, Shaw Junction and Walford, Pa., 165 cents per net ton.

**Docket 79330 (1)**—Clay, common, ground, minimum weight 60,000 pounds, except when car of less capacity is furnished, in which case marked capacity of car will govern. Rule 24 of Official Classification not to apply. Establish on, from Minco, Mich., to Portsmouth, O., 356 cents per net ton.

**Docket 79336 (2)**—Industrial sand subject to Columns 1 and 2 ratings and minimum weight as described in P.M. Railroad tariff 5694-K I.C.C. 5248, MPSC 5220. Establish rates on, to Morgantown, W. Va., from so-called Vassar Group, viz.: Juniata, McHale, Banksand, Millington and Watrousville, Mich., 319 cents per net ton in open and closed cars; so-called Paines group, viz.: Paines and Hemlock, Mich., 319 cents per net ton in open and closed cars; Daytona, Mich., 341 cents in open cars and 314 cents per net ton in closed cars.

**Docket 79348 (1)**—(A) Sand, naturally-bonded moulding in all kinds of equipment. Sand (except naturally-bonded moulding, ground or pulverized sand) in closed equipment. (B) Sand (except naturally-bonded moulding, ground or pulverized sand) in open-top equipment, minimum weight 90 per cent. of the marked capacity of the car, except that when car is loaded to full visible or cubical capacity, actual weight will apply; but orders will not be accepted for closed and open-top cars of less marked capacity than 60,000 pounds and 80,000 pounds, respectively. Amend Item 950, page 31 of CFA L tariff 575-A, which names rates on, by cancelling therefrom the following rates, from Porterfield, O., to Altoona, Pa. (A) 231, (B) 220; Berwick, Pa., (A) 297, (B) 297; Dubois, Pa., (A) 242, (B) 237; Elkins, W. Va., (A) 187, (B) 143; South Fork, Pa., (A) 231, (B) 220; Weston, W. Va., (A) 165, (B) 121 cents per net ton, account obsolete. Classification basis to apply in lieu thereof.

**Docket 79354 (2)**—Limestone, ground or pulverized (unburned), carload minimum weight 60,000 pounds. Establish on, from Bloomington, Ind., to Freeport, Ill., 259 cents per net ton.

**Docket 79371 (2)**—Limestone, agricultural (not ground or pulverized), unburned, in bulk, loaded in open-top cars only, minimum weight per car 90 per cent. of marked capacity, except that when car is loaded to full visible capacity, actual weight will apply. Establish on, to Howe, Ind., from Carey, O., 138 cents and Rimer, O., 127 cents per net ton.

**Docket 79372 (2)**—Cement, viz.: Common, hydraulic, masonry, mortar, natural or Portland, carload minimum weight 50,000 pounds. Establish rate on, from Lamson, Mich., to points as shown in Exhibit A.

**Exhibit A—W.D.A. No. 79372**

| Alton Railroad | Proposed Rates |
|---|---|
| Carrollton, Ill. ..... | 22 |


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Typical of the many new, successful flotation applications, a glass sand producer solved its problem with Denver "Sub-A" Flotation . . . removing a small fraction of very fine iron which it was impossible to eliminate with the usual washing or gravity processes.

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Thousands of Denver "Sub-A" Cells operating so successfully in worldwide industrial, mining and chemical industries have *proved* the many Denver "Sub-A" advantages . . . its mechanical and metallurgical flexibility, with positive aeration control, gives maximum efficiency in each of the wide variety of flotation applications.

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LONDON EC4, ENG.: 14 King William Street JOHANNESBURG, S. AFRICA: 8 Village Road RICHMOND, AUSTRALIA: 530 Victoria Street

Kaser, Hurricane, Eldred, Boyle, Clark (Greene Co.), Cook, Wilcoxson, Bakersfield, East Hardin, Kane, Jerseyville, Delhi, Godfrey, Ill. ..... 23

**C. and N.W. Railroad**

Winnebago, Pecatonica, Ridott, Crystal Lake, Terra Cotta, McHenry, Ringwood, Richmond, Ill., Genoa City, Wis. ..... 18

**C.B. & Q. Railroad**

Montgomery, Ill. ..... 18

Oswego, Yorkville, Fox, Millbrook, Millington, Sheridan, Burgess Junction, Shabbona, Lee, Steward, Ill. ..... 19

Keithsburg, Ill. ..... 21

**E. J. & E. Railroad**

Walker (Will Co.), Plainfield, Rogers, Stateville, Rockdale Junction, Ill. ..... 18

**I. C. Railroad**

Effingham, Evers, Dieterich, Wheeler, Lis, Newton, Ill. ..... 21

**Docket 79373** (1)—Rock, gypsum, crushed (not ground) and rock, gypsum, run of mine, in carloads, minimum weight 90 per cent. of the marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, but not less than 60,000 pounds. Establish on, from Grand Rapids, Mich., to Akron, N. Y., 360 cents per net ton.

**Docket 79385** (2)—Stone, fluxing, furnace or foundry, melting or refractory, unburned, in bulk, in open-top cars, carload minimum weight 90 per cent. of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply. Establish on, to Johnstown, Pa., from Hillsville, Walford and Shaw Junction, Pa., 139 cents per gross ton.

**Docket 79395 (2)**—Crushed stone, gravel and sand (other than bank, glass, moulding, silica, blast, core, engine, filtering, fire or furnace, foundry, grinding or polishing or loam sand) and slag in open-top cars not covered by tarpaulin or other protective coverings, minimum weight 90 per cent. of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, to Chicago, Ill., and other stations taking same rates, also Chicago Heights, South Holland, Thornton and Thornton Junction, Ill., from Cayuga, Ind., and Dickason Point, Ind., single line 60 cents; joint line 80 cents per net ton.

**Docket 79391** (1)—Crushed stone, in bulk in open-top cars, carload minimum weight 90 per cent. of marked capacity of car, except that when loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Georgia, Ind., rates to B. & O. R.R. stations in Indiana and Kentucky, as shown in Exhibit A.

**Exhibit A**

| To | Proposed Rates |
|---|---|
| Mitchell, Riverdale, Tunnelton, Ft. Ritner, Ind. | $0.66 |
| Sparksville, Medora, Ind. | .72 |
| Vallonia, Brownstown, Lehigh Spur, Ind | .77 |
| Seymour, Ind. | .83 |
| Hayden, Whitcomb, North Vernon | .88 |
| Butlerville, Nebraska, Lovett, Comiskey, Ind. | .94 |
| Holton, Dabney, Paris, Deputy, Blocher, Ind. | .99 |
| Osgood, Delaware, Pierceville, Milan, Lexington, Nabb, Marysville, Ind. | 1.05 |
| Moores Hill, Cold Springs, Dillsboro, Otisco, Charlestown, Ind. | 1.10 |
| Cochran, Aurora, Lawrenceburg, Dearborn, Watson, Jeffersonville, New Albany, Ind. | 1.16 |
| Louisville, Ky. | 1.21 |

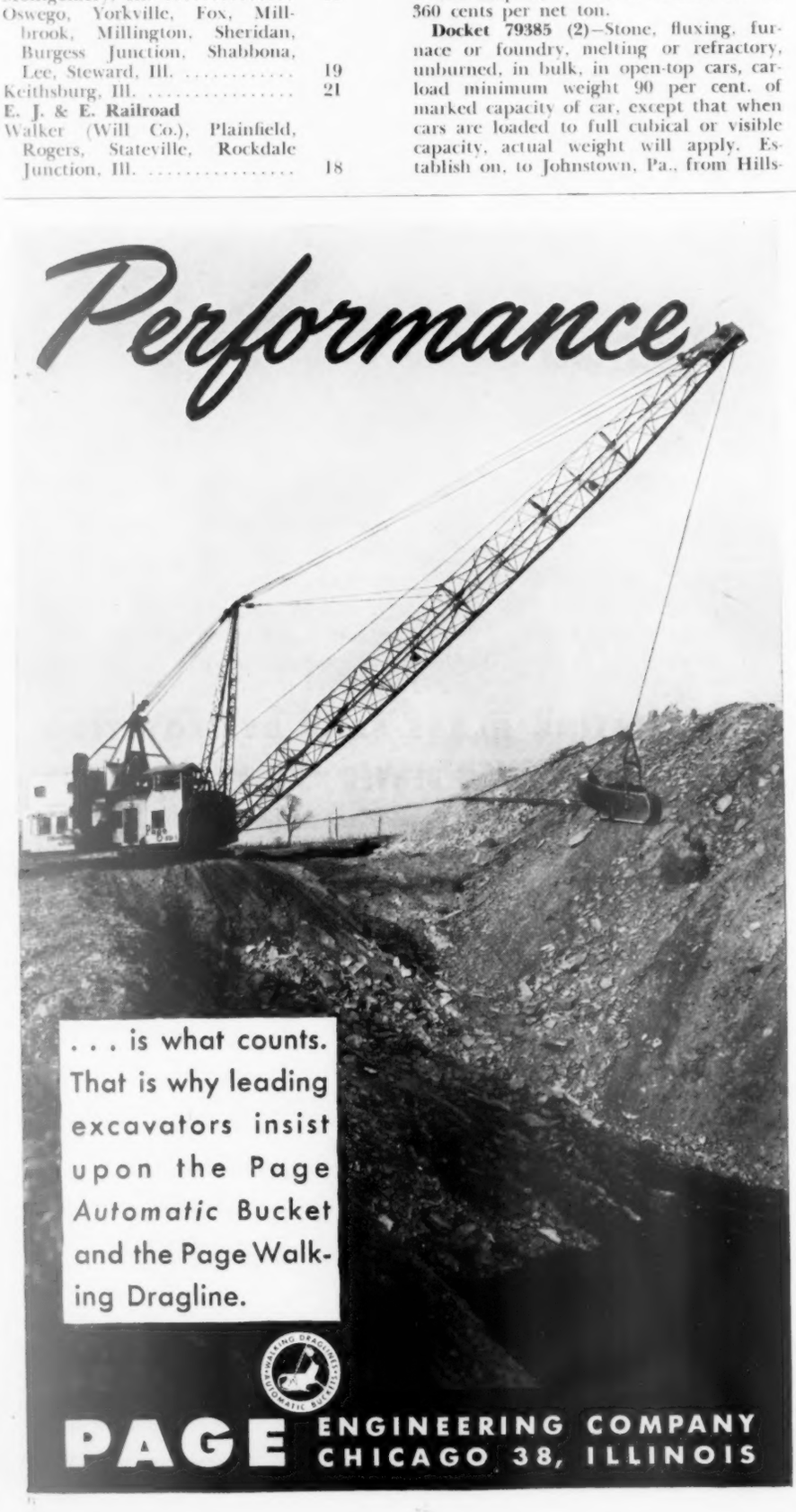
## ILLINOIS FREIGHT ASSOCIATION DOCKET

**Docket IRC 511-139-A**—Crushed stone, in open-top cars, carload minimum weight 90 per cent. of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, but not less than 40,000 pounds from Buncombe, Ill., Goreville, Ill. Present—69 cents net ton. Proposed—50 cents net ton.

**Docket IRC 511-345**—Sand, except blast, engine, foundry, glass, moulding, or silica, and gravel, carload minimum weight 90 per cent. of marked capacity of car except that when car is loaded to full cubical or visible capacity, actual weight applies, from Coleman, Ill., to Gilman, Ill. Present—$1.39 net ton. Proposed—$1.16 net ton.

**Docket IRC 511-346**—Stone, broken, crushed or ground, carload from Quincy, Marblehead, Ill., Hannibal and White Bear, Mo., to Muscatine, Ia. To establish specific rate of $1.90 per net ton in lieu of using Rule 27.

**Docket IRC 511-347**—Stone, crushed, broken, ground, as described in Rule 20, IC Tariff 13321-I I.C.C. A-11296, minimum weight 90 per cent. of marked capacity of car, but not less than 40,000 pounds, from Krause, Ill., to Valley Junc-



Performance
. . . is what counts. That is why leading excavators insist upon the Page Automatic Bucket and the Page Walking Dragline.
PAGE ENGINEERING COMPANY
CHICAGO 38, ILLINOIS

tion, Ill. Present—26 cents net ton. Proposed—19 cents net ton.

**Docket IRC 511-348**—Limestone, crushed or ground, carload, from Prairie du Rocher, Ill., to Ottawa, Ill. Present—$2.40 net ton. Proposed—$2.05 net ton.

### NEW ENGLAND FREIGHT ASSOCIATION DOCKET

**Docket 65823 (2-R)**—To establish rate on sand (other than ground or pulverized) in closed cars or in open-top cars with tarpaulin or other protective covering, carload minimum weight 100,000 pounds from Keene, N. H., to Boston, Mass. Present—$1.93 per ton of 2,000 pounds per B. & M. Railroad, I.C.C. No. A 3045. Proposed—$1.50 net ton. Reason: To place shippers at Keene, N. H., on a competitive basis with shippers located at other points.

### DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION SUBMITTALS

**Docket 34262** (shipper, suggested by carrier)—Establish joint through commodity rates on moulding sand, carload, as described item 517, S.F.T.B. freight tariff 388-F, I.C.C. 840, Lexington, Tenn., to Ludington, Mich., 407 cents; and to Swanton, O., 385 cents per ton of 2,000 pounds.

**Docket 34279** (shipper, suggested by carrier)—Establish rate of $9.25 ton per 2,000 pounds on Fuller's Earth, carload 70,000 pounds, as provided in Item 55 Description "A" of S.A.L. Ry. I.C.C. No. A 8103, from Attapulgus, Ga., Jamieson and Quincy, Fla., to Boston, Brightwood, Cambridge, Fall River, Fore River Station, Quincy, Springfield and Worcester, Mass., Bridgeport, Hartford and New Haven, Conn., and Providence, R. I.

### SOUTHWESTERN FREIGHT BUREAU DOCKET

**Docket 38186 (1)**—Gypsum, Blue Rapids, Kans., to North Chattanooga, Tenn. To establish rate of $4.80 per ton of 2,000 pounds on gypsum crude, or crushed (not ground), in bulk, carloads, minimum weight 100,000 pounds, from Blue Rapids, Kans., to North Chattanooga, Tenn.

**Docket 38190 (2)**—Lime, Missouri, to Port Wentworth, Ga. To publish specifically to Port Wentworth, Ga., the same rates as currently applicable to Savannah, Ga., on lime, carloads, as described in S.F.T.B. Tariff 382-D, I.C.C. 861. From points in Missouri named in S.F.T.B. Tariff 382-D to Port Wentworth, Ga.

**Docket 38197 (1)**—Cement, bonding, sealing or embedding, Houston, Tex., to Interstate. To establish the following rates in cents per 100 pounds on cement, bonding, sealing or embedding, not otherwise indexed by name, minimum weight 40,000 pounds from Houston, Tex., to:

| | |
|---|---|
| St. Louis, Mo., New Orleans, La., Memphis, Tenn., Kansas City, Mo. | 43 |
| Chicago, Ill. | 52 |
| Chattanooga, Tenn. | 68 |
| Atlanta, Ga. | 69 |
| Cincinnati, O. | 51 |
| Minneapolis, Minn. | 64 |
| Birmingham, Ala. | 61 |
| Jacksonville, Fla. | 74 |
| Louisville, Ky. | 48 |

### TRANSCONTINENTAL FREIGHT BUREAU APPLICATIONS

**Docket 2657** (shipper)—Stone, perlite, crude, not crushed or ground, carload. Request for rate of 55 cents per 100 pounds, minimum weight 80,000 pounds from Caliente, Nev., to Birmingham, Ala. (Group C or C-1), Tariff 3.

### TRUNK LINE ASSOCIATION DOCKET

**Docket 43213** (shippers)—Slate, crushed or ground; slate dust and slate flour; in straight or mixed carloads, minimum weight 50,000 pounds, to Harbor Junction Wharf, R. I., from Esmont and Dutch Gap, Va., 27 cents, and from Bangor and Pen Argyl, Pa., Fair Haven, Vt., Granville, Middle Granville, N. Y., Poultney, Castleton, Hydeville and West Pawlet, Va., 19 cents per 100 pounds.

**Docket 43248** (increase; carriers)—Limestone, ground or pulverized, and/or stone dust, carload minimum weight 60,000 pounds from Riverton, Stephens City, Strasburg Junction, Oranda, and Capon Road, Va., to stations on B. & O. Railroad: Hansrote, Paw Paw, Green Spring, Romney, Moorefield, W. Va., Cumberland, Amcelle, Potomac, Md., and various others, rates as shown in Exhibit A (copy of which will be furnished upon request). Reason: To place rates on proper basis.

### WESTERN TRUNK LINE NEW APPLICATIONS

**Docket X-E-43-197**—Gypsum, crude or crushed (not ground), in bulk, carload minimum weight 100,000 pounds from Blue Rapids, Kans., to North Chattanooga, Tenn. Proposed—$4.80 per ton of 2,000 pounds (by shipper).

**Docket E-41-716** — Sand-and-gravel, straight or mixed carloads. Minimum weight 90 per cent. of marked capacity of car except that when cars are loaded to the full visible capacity, actual weight will govern, but not less than 60,000 pounds. From Pueblo, Colo., to Ulysses, Kans. Proposed—$2.00 per ton of 2,000 pounds (by shipper).

**Docket E-41-717**—Silica sand, carload. Minimum weight 90 per cent. of marked capacity of car, except that when loaded to full visible capacity, actual weight will govern. From Klondike, Mo., to Keokuk, Ia. Proposed—$2.00 per net ton (by shipper).

Those three important factors build conveying efficiency and economy. They are the reason for the increasing preference for Cincinnati Conveyor Belts in aggregate plants everywhere. Remember you handle aggregate better if you have "CINCINNATI" on the job.

THE CINCINNATI RUBBER MFG. CO.
CINCINNATI 12, OHIO

CINCINNATI CONVEYOR BELTS

# NEW MACHINERY and SUPPLIES

## Clamshell

Clamshells of all-welded construction ranging from ½-to 2-cubic-yard capacity are offered by the C. S. Johnson Company of Champaign, Illinois. The main

All-welded construction.

lip is made of bent steel plate welded to the shell plates, and the digging edge is built up by a welded-in manganese steel bar. The six cast manganese teeth extend 8 inches beyond the lip edge and are held in place by five hardened, countersunk bolts. Hinge stops and alignment bars are said to keep the clams positioned; and the steel shafts, which are pinned into the clam arm, move in bronze bushings. The meehanite sheaves are equipped with frictionless bearings and are mounted on hardened steel shafts. Sheave bearings are sealed and individually greased.

## Welding Book

A recent issue of *The Eutectic Welder,* a publication of Eutectic Welding Alloys, Inc., of New York, described the features and performance of two new rods, EuteChrom 11 for acetylene welding and EuteChrom 12 for carbon arc and metallic arc welding.

According to the description, EuteChrom 11, used with the oxy-acetylene torch, employs EuteChrom Flux, an especially developed product to promote bonding of the weld metal with the base metal at the lowest possible heat. Wearing properties of the combination are said to be extremely high because of the presence of finely disseminated and unusually hard particles.

EuteChrom 12 utilizes the same principles, with the addition of a special coating for use with the metallic arc process. It can be successfully applied with both a.c. and d.c. welding.

## Pipe-line Strainer

A pressure and suction pipe-line strainer, which is said to maintain maximum liquid flow through piping systems while performing the necessary function of protecting pumps and moving parts of other vital equipment, is now manufactured by the J. A. Zurn Manufacturing Company of Erie, Pennsylvania. The total area of the strainer basket perforations was designed to exceed the area of the opening of the inlet by more than a 1½ to 1 ratio, in order to permit maximum flow. An air pressure relief valve on the cover permits the escape of air which may impede the operation of the strainer and other pipe-line mechanisms.

This strainer can be furnished with a magnetized basket for intercepting ferrous metal particles. Hydrostatically tested to meet various service pressures, it is available for either high or low pressure installations. The high-pressure strainers have a removable drop-bolted cover, while the low-pressure strainers have yoke-clamp covers. The strainer basket is removable for cleaning, and the unit is also available with a cleanout plug for blow-down cleaning. This device is

Pressure and suction pipe-line strainer.

made in cast bronze, steel, semi-steel, iron, or alloyed metals, depending upon the requirements.

## Flange Tool

"Flange-Jack," a new tool for opening pipe flanges for gasket renewal, has been developed by the T. G. Persson Company of Bloomfield, New Jersey. By eliminating the hammer-and-chisel method, the maker claims, this tool will open pipe flanges without damage to the flange faces, and without danger from sparks. Smooth and even pressures may be exerted, thus avoiding vibration along the pipeline. Flanges are opened evenly,

A new tool for opening pipe flanges.

without shock, and the bolt holes are maintained in continuous alignment. Flange-Jacks are said to be capable of opening joints against a load of 15 tons. The jaws are heavy, one-piece steel forgings with case-hardened screw points. All flanges from 2 to 20 inches may be opened with the standard size Flange-Jack.

## Open-Bowl Scraper

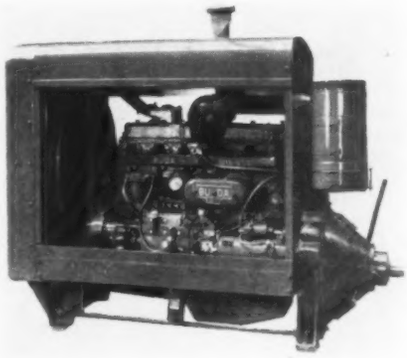
Production of three sizes of open-bowl scrapers, matched in capacity to the power of the recently introduced new Caterpillar diesel tractors, and built to perform with them as a complete earth-moving unit, is announced by the Caterpillar Tractor Company of Peoria, Illinois.

Features claimed for the open-bowl design are stability, visibility, and access for shovel and dragline loading. The high apron lift, over-sized, precision-grooved sheaves and double-curved self-sharpening cutting edges are also pointed out by the manufacturer. The new scrapers, designated as numbers 60, 70, and 80, have respective struck measures of 6, 8.7, and 13.8 cubic yards. Optional tire sizes for correct flotation are available in order to have tires that match the existing job conditions.

Open-bowl scraper with capacity matched to the power of new diesel tractor.

## ● Diesel Engine

The Buda Company of Harvey, Illinois, presents a new model 6-DC-844 industrial-type diesel engine. This vertical, overhead valve, 4-cycle engine is said to be capable of 158 horsepower maximum at 1,800 r.p.m. for intermittent service, and 140 horsepower maximum at 1,800 r.p.m. for continuous service. The 6 cylinders, which have a 5¼-inch bore, are lined with a removable, wet-sleeve-type alloyed cast-iron liner. The aluminum-alloy pistons have 3-compression and 2-oil rings and a 6½-inch stroke. Two heads of alloy cast-iron, with replaceable exhaust-valve seat inserts, are used. The crankcase and cylinder block are combined in a one-piece alloyed iron casting, ribbed for rigidity, and divided horizontally 2 inches below the crankshaft. Fuel injection is by means of a mechanical injection pump controlled by a governor.



Vertical, overhead valve, 4-cycle engine.

In addition, the Buda Company offers a larger 8-cylinder model, 8-DC-1125, and a heavy-duty supercharged engine, model 6-DCS1879.

## ● Convertible Crane

A convertible crane, shovel and dragline added to the line of the Lima Locomotive Works, Inc., Lima, Ohio, is designated as Type 2000. As a crane, it has a lifting capacity of 100 tons; equipped as a shovel or dragline, it has a capacity of 5 cubic yards. The Type 2000 differs from other Lima machines inasmuch as the drums are in tandem. It is equipped with air control, which is said to simulate the smooth, quick and positive movement of steam power. The ease with which all movements are accomplished, claims the manufacturer, results in greater output and less effort on the part of the operator. The long, wide crawlers effect low bearing pressure and maximum stability when working in or traveling over wet and uneven ground. It is powered with either a Diesel or an electric unit and can be converted in the field from one combination to another without major dismantling.

Small crane being lifted by 100-ton crane.

## ● Self-Locking Stop Nut

For equipment and installations requiring a self-locking stop nut, the Elastic Stop Nut Corp. of America, Union, N. J., presents its line of hex-type elastic stop nuts in S.A.E., U.S.S., and 8-pitch threads. This self-locking nut has a compression collar which is locked into the head of the nut, and is so made that its center opening is somewhat smaller than the bolt; thus the collar has a friction grip on all the threads of the bolt. The bolt thread is said to work its way into the collar by impressing rather than cutting. As a result, compression forces are set up to allow the nut, seated or un-

Self-locking nut, with compression collar.


# The NEW LEADER leads the field again

*New design • All Steel • Longer life spreader*

***Check all these features and compare them with any spreader on the market today.***

- Gear boxes driving distributor discs are equipped with steel-cut gears and ball bearings running in dust proof and oil tight gear cases. Large gear box driving wide bottom chain conveyor is equipped with a steel ring gear and pinion. A thrust ball bearing, also running in a dust proof and oil tight gear case.
- New style conveyor is 24 inches wide.
- Extra heavy duty pintle type conveyor chain is used.
- Feed gate which determines thickness of spread now controlled by a lever easily reached from cab of truck.
- Check and compare size of shafting, thickness of distributor discs, size of roller chain, heavier pintle chain.
- Most important! Notice slope of spreader box.

**• With this new style, extra-wide bottom spreader you will be able to handle all types of lime, either wet or dry, and even marl—which is usually extremely wet.**

**No vibrator is required and no one is needed to push down the wet lime. All you do is adjust the feed gate to the number of tons desired per acre and The NEW LEADER takes care of the rest.**

**Easy maintenance. . . . Rugged construction. . . . More profit . . . when you own and operate THE NEW LEADER SPREADER.**

**Write for prices, delivery and dealer in your territory. Some territories still open for dealers.**

## HIGHWAY EQUIPMENT COMPANY, INC.

**Cedar Rapids, Iowa, U. S. A.** **Phone 32017-32018**

**Manufacturers of the world's most complete line of spreaders.**

**NOTICE: Spreaders also available in all steel box, except hopper or spreader box of wood. Both sides and front end and back out of wood instead of steel.**

seated, to maintain a tight grip on the bolt. The manufacturer claims this product to be rust resistant and capable of being used repeatedly, as the resilient collar element retains its holding power. The elastic stop nut, which is said to withstand severe shock and vibration, is available in standard or thin heights.

## ● Safety Goggles

For furtherance of eye safety in industry, the Welsh Manufacturing company of Providence, Rhode Island, offers its Fog-Free goggle. The Fog-Free has come into use for splash protection and clear vision. A wide area around the eyes is covered and protected by this device; and where furnaces and boilers must be entered for cleaning, inspection or repairs, it is claimed to prevent soot, dust, and prespiration from obscuring vision and also to reduce inhalation of dust. According to the manufacturer, this goggle is in no sense a respirator, but much dust is filtered out by the pads in the intake ports.

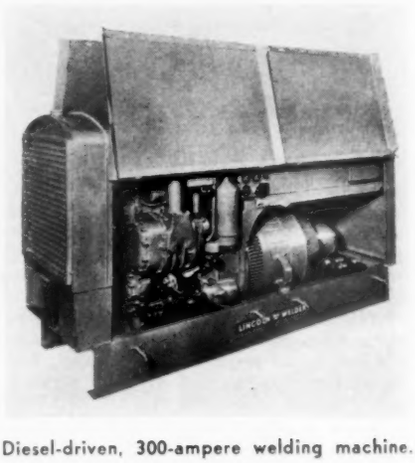
Normal breathing provides a complete change of air in the lens chamber about once every second; this air is said to

Fog-free splash protection goggles.

remove all moisture entering the chamber from around the eyes. The plastic, non-shatterable lenses are claimed to exceed the Federal break test requirements. An attachment is available, consisting of a tinted slip lens, which provides glare protection and additional impact resistance.

## ● Welding Machine

A new welding machine of 300-ampere capacity, diesel engine driven, and designed for use in locations where electric power is not available, is announced by the Lincoln Electric Company of Cleveland, Ohio. The 2-cycle engine, the latest addition to the Lincoln "Shield-Arc" welder line, is claimed to provide high efficiency at low cost. A dual continuous control permits the operator to select any type of arc and any arc intensity required for a specific job. The welding generator has an NEMA rating of 300 amperes at 40 volts, with a current range for welding duty of 20

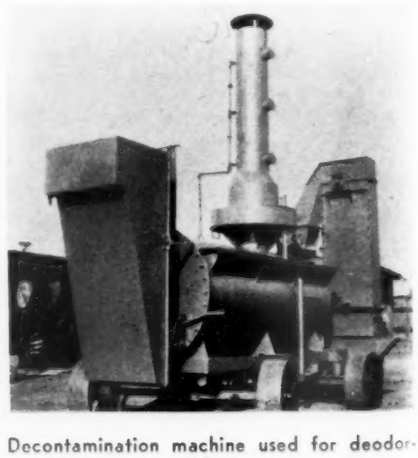


Diesel-driven, 300-ampere welding machine.

to 40 volts at 60 to 375 amperes. This welder reportedly supplies a uniform welding current for metallic welding in any position with bare or heavily coated electrodes, as well as in carbon arc welding.

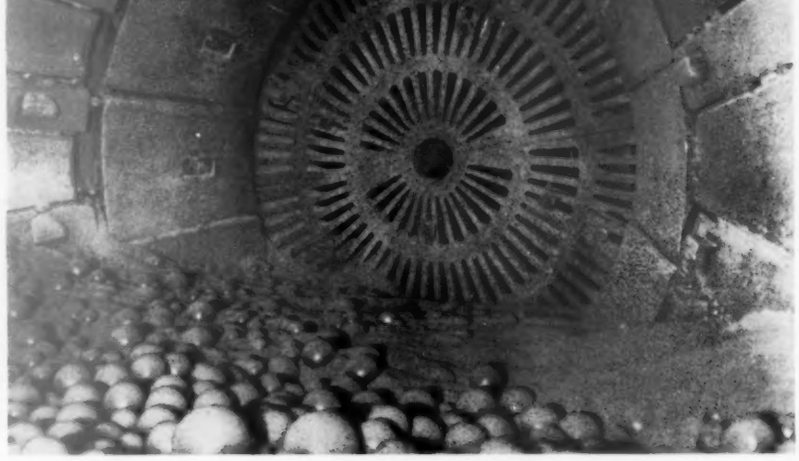
## ● Lime Plant

A new portable decontamination machine for deodorizing the battlefields of Europe has been developed by the Lime & Hydrate Plants Company of York, Pennsylvania. It is said to provide a



Decontamination machine used for deodorizing.

breakdown of the raw material, which has a lime base, and for the addition of such liquid as is required to meet varying conditions. An elevator carries the

UNRETOUCHED PHOTOGRAPH

*Business End*

OF A HARDINGE *Conical Ball Mill*

When the president and advertising manager of a company crawl inside one of their own products to take a picture of its workings, that's news! The above photograph of the Dry Grinding Discharge Grate in a Hardinge Conical Ball Mill is the result.

Men who know grinding will find this unretouched photograph interesting. Note the load, showing natural ball segregation. Only a Hardinge Conical Mill with its exclusive design, its efficiency proved everywhere, can give you these results. Specify Hardinge Mills for your plant.

• *Bulletin 13-D has the whole story. Yours for a penny post card to the Hardinge Office nearest you.*

HARDINGE COMPANY, INCORPORATED • YORK, PENN.

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raw material to a feeder, which discharges it into the drum containing the liquid. The liquid has been passed through a condenser stack to prevent the escape of dust. Material is discharged every 20 minutes into the classifier, where the degree of admixture can be determined and prepared.

This machine is carried on four 30-inch-diameter roller-bearing wheels with 10-inch treads, and is powered with a 7½-horsepower motor. The feeder, elevator, hydrator, pump, and propulsion are driven through a gear-and-reduction system. Provision is made to take water from sumps or barrels.

## ● Heavy-Duty Trucks

Six new models of heavy-duty trucks are to go into production soon at the recently acquired Emeryville, California plant of the International Harvester Company. The highway transport models, W-3042-H and W-4064-H, will have gross vehicle weight ratings of 30,000 and 40,000 pounds respectively. The W-3042-H, a 4-wheel vehicle which drives on the two rear wheels, is equipped with a Timken S-200 rear axle with a selection of three gear ratios. The W-4064-H, a 6-wheel unit with 4-rear-wheel drive, is supplied with a Timken W-3012 tandem drive of 6.166 to 1 ratio.

The four off-highway models, W-4042-OH, W-4564-OH, W-6564-OH, and W-9064-OH, have gross vehicle weight ratings of 40,000, 45,000, 65,000, and 90,000 pounds respectively. The W-4042-OH employs a Timken U-200 double-reduction rear axle, with either a 7.84 or 8.74 to 1 gear ratio. The other

New features of truck cabs

three are equipped with Timken tandem-drive axles having gear ratios to meet the specific applications.

The International-Continental S-6749 gasoline engine is listed as standard, but also available are the following engines: the Cummins HB-600, NHB-600, and NHBS-600 (supercharged) diesels; and the Hall-Scott HS-400 gasoline engine. A selection of six 4- or 5-speed Spicer heavy-duty transmissions, and a choice of four 3-speed Spicer auxiliary transmissions of either the direct or overdrive type, may be had.

## ● Flexible Coupling

A new L-R Type C shrouded flexible coupling has been announced by the Lovejoy Flexible Coupling Company of Chicago, Illinois. Type C is designed for heavy-duty service from 2 to 2,500 horsepower at 100 r.p.m. Individual free-floating load cushions between the jaws

the
RED
ELASTIC
COLLAR
protects
permanently
the RED ELASTIC COLLAR – denoting an ESNA product – is . .
. . permanently clinched to prevent turning under application and subsequent operational stresses.
permanently secure against vibration effects. The bolt impresses does not cut full contact threads.
. . permanently tight against moisture. Bolt threads have 100% contact in collar, and full metal seat.
permanently elastic. The Red Collar retains its grip after repeated usage.

**What happens when this Red Elastic Collar becomes part of a nut? The nut becomes an ESNA Elastic Stop Nut! And it provides permanent protection for any detachable or adjustable assembly.**

***How?***

***First,*** **an Elastic Stop Nut *locks in position anywhere on a bolt or stud.* Every bolt can be precisely prestressed to carry its full load. Positioning devices can be adjusted with precision. Vibration cannot disturb these settings – because the Red Elastic Collar eliminates all play between bolt and nut threads with its full contact, permanent grip.**

***Second,*** **it *prevents thread corrosion.* Moisture is sealed out. Adjustment or removal is easy – any time.**

***Third,*** **it *prevents thread damage.* Full thread contact in the Red Elastic Collar keeps the metal threads firmly seated. Axial play caused by vibration or stress reversal is dampened.**

***Fourth,*** **it *prevents seepage of liquids past bolt threads.* Permits nut to be used as a sealing device.**

***Fifth,*** **it *prevents maintenance waste.* The Red Elastic Collar, which does not injure the bolt or its plating, permits repeated usage.**

***Here's a challenge:*** **Send us complete details of your toughest bolted trouble spot. We'll supply test nuts – FREE, in experimental quantities. Or, if you want further information write for literature. Elastic Stop Nut Corporation of America, Union, New Jersey. Representatives and Agents in principal cities.**

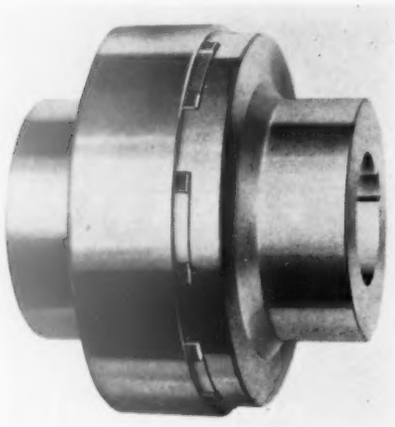
ESNA

**ELASTIC STOP NUTS**

INTERNAL WRENCHING · ANCHOR · INSTRUMENT MOUNTING · SPLINE · CLINCH · GANG CHANNEL

***PRODUCTS OF:*** **ELASTIC STOP NUT CORPORATION OF AMERICA**

are held in position between an inside steel sleeve and the removable steel collar. Types are available for directly at-



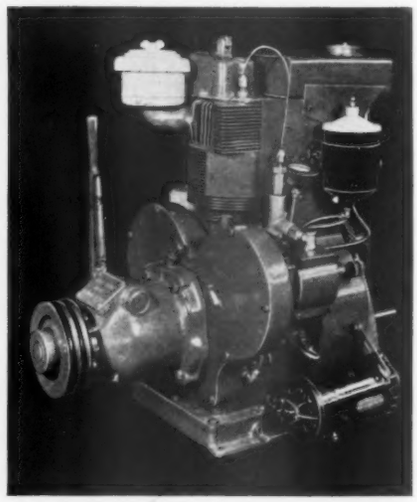
L-R type C shrouded coupling.

taching to the flywheel, and also drum types and others for disassembling without disturbing the drive or driven equipment.

Cushions of various materials, adapted to the particular service for which the coupling is used, are free to deform to emergencies, to correct misalignment, and to provide protection from shock, vibration, and other transmission troubles. In operation, half the cushions are idlers (except on reversing load) thereby providing a stand-by set of cushions. An extension of the collar which encircles the coupling safeguards material and fingers from the heads of the bolts that secure the load cushion retainer.

## ● Diesel Engine

A new diesel engine rated at 3¾ horsepower at 1800 r.p.m. is being produced by the R. H. Sheppard Company of Hanover, Pennsylvania. It is a single-cylinder, four-cycle unit with a 3-inch bore, 4-inch stroke, and a piston speed of 1200 f.p.m. at 1800 r.p.m. with a 28-cubic-inch piston displacement. Employing a standard Sheppard fuel injection system and a fuel tank of 9/10-gallon capacity, this engine consumes ½ pound of fuel

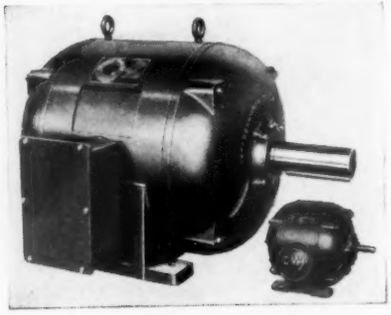


A 3¾ horsepower, 1800 r.p.m. engine.

per brake horsepower hour. It is recommended for powering auxiliary light plants, pumps, and other power-driven equipment. According to the manufacturer, it is the only air-cooled stationary diesel and the smallest diesel ever built for commercial service.

## ● Protected Motor

A "Sealedpower" motor of new design has been announced by the Crocker-Wheeler Division of the Joshua Hendy Iron Works of Ampere, New Jersey. This product was developed for use in dusty locations, in places of excessive moisture, and for all applications where a conventional alternating-current totally enclosed, fan-cooled motor has been used. The vital working parts of a Sealedpower motor are completely sealed against contact with the atmosphere and air-borne moisture, steam, acid or alkali fumes, dripping or splashing liquids, corrosive gases, oil, metallic chips, lint and other harmful substances. Rated 55 degrees C. rise,

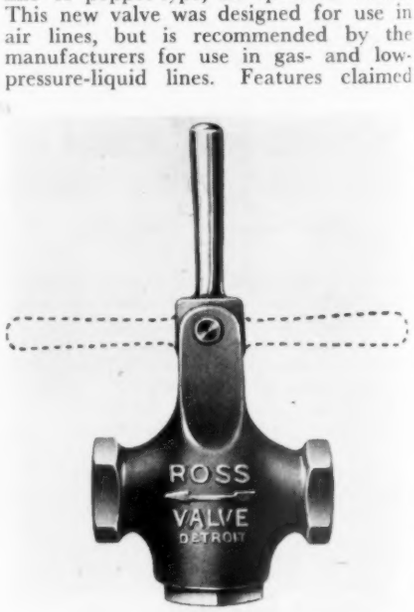


Sealed design protects motor.

full-load continuous duty, the motor conforms to NEMA standards for mounting dimensions. It is available in sizes from 2 to 15 horsepower, and may be operated either horizontally or in a vertical position, with the shaft up or down.

## ● Shut-Off Valve

The Ross Operating Valve Company of Detroit, Michigan, has announced the addition of a shut-off valve to their line of poppet-type, air-operated valves. This new valve was designed for use in air lines, but is recommended by the manufacturers for use in gas- and low-pressure-liquid lines. Features claimed




Lever-action locking valve.

for this new product are: full flow, quick action automatic lever locking in either the open or closed position; leak-proof seal through line pressure and lever position indicating open or closed valve.


# GET TONNAGE PLUS A UNIFORM PRODUCT

with

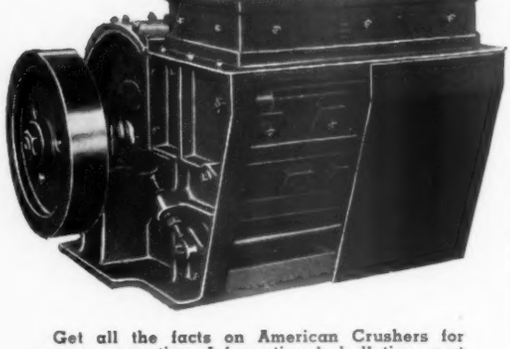
## AMERICAN CRUSHERS

**Great flexibility for agstone fineness or roadstone coarseness**

Americans produce a uniform fineness or a uniform coarseness with a minimum of unwanted fines and no oversize. Their wide range of reduction provides a one-step operation from one-man stone or a highly efficient closed-circuit reduction of breaker sizes.

Americans assure a low operating cost with capacities up to 250 TPH.

Of rugged, dust-tight sectional construction — easily dismantled for moving and reassembling.



Get all the facts on American Crushers for your operation—Informational bulletins sent upon request.

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

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# TRADE NOTES

The Lima Locomotive Works, Inc., Shovel and Crane Division of Lima, Ohio, announces the appointment of Edward E. Worrell as assistant district manager of the Central District. Mr. Worrell joined the Lima organization through its subsidiary predecessor, the Ohio Power Shovel Company in 1929 and has been actively serving the same territory as service engineer and sales representative during the past 16 years.

The Philadelphia Gear Works, Inc., of Philadelphia, recently made the following appointments:

Leroy L. Handy, who will represent them in the Detroit area on all products including Limitorque valve controls.

The Atwood Machinery Company of Los Angeles, to represent them in southern California on everything except Limitorque valve controls.

Maj. H. B. Bishop

Major H. Berkey Bishop has been appointed general manager of the Kotal Company of Summit, N. J., and New York City. He is a son of Howard B. Bishop, proprietor of the Kotal Company.

Prior to entering the army, Major Bishop was superintendent of the plastics department of the Vulcanized Rubber Company, Morrisville, Pa. He served for four years as executive officer of the Southwestern Proving Ground of the Army Ordnance Department at Hope, Arkansas.

The Hendrick Manufacturing Company, Carbondale, Pa., which produces perforated and fabricated metals, has made three additions to its sales force.

Clyde M. Watson of Atlanta will cover Georgia and Florida, and R. Grayson Yarrington of Baltimore will handle sales in the greater portion of Maryland. Westchester Steel Products of White Plains, was appointed to represent Hendrick in New York.

The Wickwire Spencer Steel Division, Colorado Fuel & Iron Corporation, has announced the appointment of Herbert D. Rollo as New England district sales manager, with headquarters in Boston.

In his new position Mr. Rollo will have full charge of all sales operations throughout New England. Currently Wickwire Spencer is expanding its sales activities and developing new and wider post-war markets throughout the New England area in which several of the company's plants and fabricating mills are located.


**PULVERIZERS**

**Hundreds of Installations . . Use Bradley Pulverizers**

for the reduction of
AGRICULTURAL LIMESTONE
Cement Materials and all Dry, Non-Metallic Minerals

**CAPACITIES: 1 TO 50 TONS PER HOUR . FINENESSES: 20 TO 350 MESH**

**BRADLEY PULVERIZER CO.**
**ALLENTOWN, PENNA.**

**MARION HYDRAULIC HOISTS HAVE THESE OUTSTANDING FEATURES**

- Self-equalizing double arm lift.
- Low uniform oil pressure.
- Hoist lifts well ahead of center of body.
- Sturdily built hoist sub-frame.
- All pumps equipped with Torrington needle bearings and phosphor-bronze wear plates.
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No "drafting board dream" is the Marion Hydraulic Hoist. It is a sturdy, long life, trouble-free unit designed by Marion engineers right on the job under actual working conditions.

See Marion for a complete line of standard and special-built equipment. There's a Marion Body and Hoist for every hauling job.

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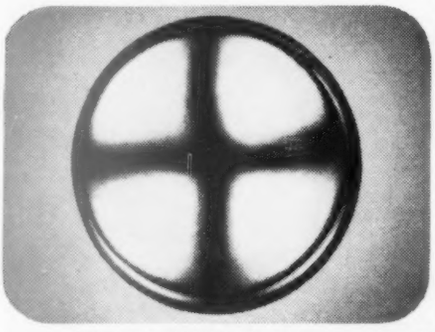
MARION, OHIO
*See Your Distributor or Write*

THE *Safest* EYES WEAR **WILLSON SAFETY SPECTACLES**

• Accurate fit for every worker—whatever his type of face—is easily possible with Willson's 20 sizes. Remember, correct fit is necessary for maximum safety. For day-long comfort, too.



• SUPER-TOUGH* lenses ward off impact hazards. Each lens is thoroughly tested. Examples: Polariscope test for uniformity of heat treatment; Federal drop-ball test for impact resistance.

• Choose from two styles. "A", without sideshields, "AS", with sideshields, (plastic, Sonite, leather, or wire screen). For glare protection, too, specify lenses in Willsonite green.

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*For help with your eye-protection problems, get in touch with your Willson distributor or write direct to Willson Products, Inc.*

*T. M. Reg. U. S. Pat. Off.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

DOUBLE **WILLSON** PRODUCTS INCORPORATED

Established 1870

102 THORN STREET READING, PA., U. S. A.

Covering parts of Ohio, Indiana and Michigan, Bigelow-Gibson, Inc., has opened a new distributorship for industrial rubber products in Toledo. Principal items supplied by the company are many types of industrial hose and conveyor and transmission belts manufactured by Hewitt Rubber Corporation, Buffalo, N. Y.

Samuel J. Gibson, president, brings to the new business 11 years of experience with Hewitt Rubber Corporation as a sales and service engineer and production supervisor. Warren C. Bigelow, vice-president, has specialized in industrial rubber products since 1938. For the past five years he has served Hewitt in the industrial sales and aircraft products divisions.

The Upson-Walton Company of Cleveland will celebrate its 75th anniversary on February 1 by formulating plans for continued achievement. As manufacturers of numerous products, including wire rope, tackleblocks, boat fittings, accessories and brattice cloth, its officials foresee an unprecedented volume of production and sales, since these items are needed in nearly every phase of post-war rehabilitation.

E. T. Tuller

E. T. Tuller has been appointed domestic sales manager of Athey Products Corporation.

Mr. Tuller joined the company in 1940 as special representative in the introduction of the Athey Force-Feed Loader. In 1943 he was appointed district representative, taking over the Central Sales Division. He is a recognized authority on the application of Athey products.

The California Wire Cloth Corporation, West Coast subsidiary of the Colorado Fuel & Iron Corporation, will manage sales and service operations of C. F. & I. on the Pacific Coast, according to E. P. Holder, president.

California Wire Cloth thus will direct the sales of all products of the following companies: the Colorado Fuel & Iron Corporation, Wickwire Spencer Steel Division, Wickwire Spencer Metallurgical Corporation, Coburn Trolley Track Division and American Wire Fabrics Corporation. According to the announcement, the territories served by the new sales set-up will comprise Washington, Oregon, California and Nevada.

Dr. Louis Cleveland Jones, 75, internationally-known industrial chemist who retired recently as director of the Stamford, Conn., laboratories of the American Cyanamid Company, died December 29 at his home in Greenwich, Conn. He had been serving American Cyanamid in a consulting capacity.

Dr. Jones was the holder of many patents in alkali manufacture, nitrogen fixation and other chemical processes, and was the author of numerous works on these subjects.

Among newly appointed distributors by well-known equipment firms are the following:

The Hawkeye Machinery Company, Des Moines, Iowa, for the Barber-Greene Company of Aurora, Illinois, in central and eastern Iowa.

L. R. Austin, Billings, Montana, for Wickwire Spencer Wire Rope in Montana, Wyoming and Idaho.

The Milwaukee Machinery Company, Portland, Oregon, for Fairbanks-Morse Turbine Pumps; the Cascade Machinery Company of Seattle for Fairbanks-Morse pumping equipment.

The Weeks Engineering Company, St. Louis, for the Briggs Clarifier Company in eastern Missouri, a part of southern Illinois and a section of southern Indiana.

Eugene C. Bauer, president of the Kensington Steel Company, of Chicago has been elected a director and vice-president of Poor & Company of Canton, Ohio.

Sprout-Waldron & Company of Muncy, Pennsylvania, announces the appointment of Harold J. Alsted as its representative in Chicago.

Mr. Alsted has had two years' experience in the company's main office at Muncy, and for a period of three years he was its Southeastern representative, with headquarters at Birmingham.

In line with its program for expanding the staff of field welding engineers to serve all users of welding, the Lincoln Electric Company, Cleveland, Ohio, announces the addition of the following district office representatives.

Omer W. Blodgett has been appointed for the Grand Rapids, Michigan, area; Frank Boucher, for the Detroit, Michigan, area; R. K. Kewley, the Cleveland, Ohio, territory; G. B. Moseley, the St. Louis, Missouri, area; and Captain L. J. Cogan, the Philadelphia area.

Walter E. Schott was elected a director of the Cleveland Pneumatic Tool Company and its wholly-owned subsidiaries, Cleveland Pneumatic Aerol, Inc., of Euclid, Ohio, and the Cleveland Pneumatic Tool Company of Canada, Ltd., Toronto, Ontario. This action followed the acquisition by Mr. Schott and his associates of the preferred stock and more than 97 per cent. of the common stock of the parent company at a reported price of $4,150,000.

The Hays Corporation, Michigan City, Ind., which manufactures boiler room and industrial instruments and controllers, announces that Cochrane flow meters, formerly manufactured by the Cochrane Corporation of Philadelphia, have become a part of the Hays line of products and will be sold by Hays representatives as Hays-Cochrane instruments for flow, liquid level, pressure and temperature measurement.

Edward Boehm, vice-president and treasurer of Gar Wood Industries, Inc., Detroit, has been elected a director to fill a vacancy, it was announced by Commander John J. Bergen, U.S.N.R. (Inactive), chairman of the board.

The International Harvester Company has announced the establishment of its first Pacific Coast motor truck manufacturing plant at Emeryville, California, in the San Francisco Bay area. The trucks to be made at Emeryville will be available in six models, ranging in size between 30,000 pounds and 90,000 pounds gross vehicle weight rating.

Two models of the "Western Freighter" highway transport models were shown at a special exhibit at Denver on January 21. Two subsequent exhibits were held—one at Cheyenne on January 24; the second, at Salt Lake City on January 30. Others will be scheduled at cities throughout the 11 Western states at which International branches have been established.

The retirement January 1 of two division heads of the Du Pont Explosives Department was announced today. They are C. A. Woodbury, manager of the Technical Division, and I. J. Cox, manager of the American Glycerin Section and production manager of the Black Powder Section.

Mr. Woodbury will be succeeded by Dr. B. H. Mackey. The duties of Mr. Cox will be taken over by G. H. Loving, an assistant director of sales of the Explosives Department, and those in the Black Powder Section will be assumed by H. K. Babbitt, production manager of the Special Products Section.

C. L. Williams was recently appointed a member of the sales engineers staff of the Foxboro Company, Foxboro, Massachusetts. Mr. Williams will have headquarters in New York City and will have northern New Jersey as his territory.

Claiborne C. Van Zandt has been promoted to assistant manager of the crushing, cement and mining section of the basic industries department of the Allis-Chalmers Manufacturing Co., Milwaukee, Wis., according to an announcement by G. V. Woody, manager of the firm's basic industries department. Mr. Van Zandt will have charge of sales and application engineering in the Milwaukee area.

A change in name from the Hi-Way Service Corporation to Drott Manufacturing Corporation of Milwaukee has been announced by E. A. Drott, president. The new corporation title will more readily identify equipment with the manufacturer.

The following machines are manufactured at present: Drott bulldozers, Drott Bullangledozers, Drott Bullclam shovels, Drott skid-loaders, Drott Go-Devil tractor cranes, Drott town patrols and Drott Hi-Lift loaders.

Elmer F. Brunner, known nationally for his work in developing farm tires for the Goodyear Tire and Rubber Company, died recently at the Cleveland Clinic after an illness of several months.

As manager of Goodyear's farm tire development, Mr. Brunner directed the research and design that was responsible for Goodyear's extensive line of tractor and implement tires and the famous open-center Sure Grip tread. He also sponsored the development of liquid inflation of tractor tires, a practice generally used by tractor owners today.

Roy K. Ferguson, president of the St. Regis Paper Company, recently announced that the firm had formed the St. Regis Sales Corporation to handle sales of its products and those of its subsidiaries in the United States. Mr. Ferguson is also president of the new wholly-owned St. Regis subsidiary.

Appointment of Gordon W. Monfort to the advertising department of Caterpillar Tractor Co., as director of the news bureau, has been announced by G. M. Walker, advertising manager. Before he assumed his new duties Mr. Monfort had served as personnel director at the Caterpillar San Leandro plant in California.

J. W. Brauns

J. W. Brauns has been appointed manager of General Electric's Industrial Haulage Division, according to an announcement by G. W. Wilson, manager of the company's Transportation Division. His main responsibility is the sale, application, and servicing of locomotives for use in industrial work, including diesel-electric and electric mine locomotives, as well as electric equipments for these locomotives. Mr. Brauns succeeds F. H. Craton who is now assistant manager of the Transportation Divisions.

William Schannep has been appointed district representative of the Pacific Northwest area for the Pioneer Engineering Works of Minneapolis. Mr. Schannep's territory will include Washington, Oregon, Idaho, western Montana, Alberta and British Columbia. His headquarters will be at Seattle.

Although the termination of hostilities in 1945 resulted in the closing of the six Hercules Powder Company government-owned ordnance works, the firm's expansion program will be carried on without interruption. Proposed new plants and facilities, expected to be completed within three years, will probably send employment levels 74 per cent. above the pre-war figure.

Robins Conveyors, Inc., of Passaic, N. J., recently opened new offices in the Brown-Marx Building in Birmingham, Alabama.

Alabama headquarters is under the direction of Charles A. Thompson, who had served the company before the war as a sales engineer in the Pittsburgh office. He will work with Robins Conveyors agents in all Southern states east of the Mississippi.

Robert M. Hatfield, formerly deputy vice-chairman of the War Production Board, was recently named assistant general sales manager of the Combustion Engineering Company. He had left the firm in 1942 to head the boiler section of the Power Branch, W. P. B., and later the Production Scheduling Division.


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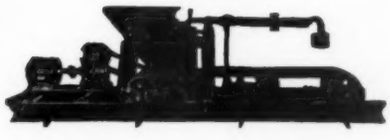
"4-SQUARE SERVICE" in raising PRODUCTION RECORDS

for FEEDING



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. . . are playing an important role in meeting post-war production demands.

Poidometers speed up the handling of raw and finished materials by providing fast, accurate and automatic weighing and proportioning on a low-cost basis.

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Choice of handling capacities is available, from 10 to 600 cu. yds. per hour. Gas, electric, or diesel power. Send for useful book based on data supplied by contractors, engineers, gravel producers, mine operators, etc. It's free.

90 Yds. an Hour from Deep Pit

Above picture shows a Sauerman Cableway mining a gravel deposit 90 ft. deep and 1,000 ft. wide and moving the material to a hopper on top of screening plant at rate of 900 cu. yd. a day. Operating cost is only a few cents a yard.

SAUERMAN BROS., INC.

534 S. CLINTON ST. CHICAGO 7, ILL.

The Baldwin Locomotive Works announce the appointment of Robert G. Allen as general sales manager. Mr. Allen assumed his duties last November.

E. J. Gottfried

Ernest J. Gottfried, a member of the Fawick Airflex organization of Cleveland, Ohio, has been appointed service manager for the company.

Mr. Gottfried was a former test engineer with General Motors Diesel Engine Division, and has recently returned from Russia, where he spent 18 months with the Russian Navy, installing G. M. Diesels equipped with Fawick clutches in naval craft.

Frank E. Nutt has been named assistant sales manager of the Crocker-Wheeler Electric Manufacturing Company, Division of Joshua Hendy Iron Works at Ampere, New Jersey. He was replaced at his former post as manager of the company's Washington, D. C. office by A. M. R. Lawrence.

Mr. Nutt was associated with the General Electric Company before joining Crocker-Wheeler in 1942.

Mr. Lawrence spent 22 years with Westinghouse in Pittsburgh and Washington, and later maintained his own engineering office in Washington until he joined the Maritime Commission in 1942.

Elmer C. Salzman, vice-president in charge of export operations for Robins Conveyors, Inc., was commissioned by his firm to spend several months in England to bring activities up to prewar levels and to survey the need for Robins equipment in connection with rebuilding war-damaged areas. Prior to the war, Mr. Salzman was located for 14 years in London as engineering manager for Robins.

Robins directs the materials handling department of Fraser & Chalmers Engineering Works at Erith, Kent (a suburb of London). Through this arrangement the company has designed and built many conveying systems throughout the British Isles and in Europe.

C. N. Karr

The appointment of Charles N. Karr as sales promotion manager of the Allis-Chalmers Tractor Division has been announced by W. A. Roberts, vice-president. Mr. Karr succeeds E. L. Aikins, who was recently placed in charge of the company's Tractor Division office at Seattle. He has been associated with the Tractor Division since 1919.

Mr. Aikins will represent Allis-Chalmers interests in Alaska, the Yukon and British Columbia. He succeeds S. B. Tatom, who recently resigned to become president of Lomen Equipment, Inc., distributor of Allis-Chalmers tractors and equipment in Alaska.

Promotion of three directors of research projects at the Caterpillar Tractor Co. and an assistant engineer to positions as assistant research directors has been announced by C. G. A. Rosen, director of the company's research department.

The newly appointed assistants are Dr. L. A. Blanc, who will be in charge of physical, chemical, combustion and metallurgical projects; W. L. H. Doyle, supervisor of special investigations and general research projects including liaison with cooperative and national research activities; C. R. Maxwell, in charge of diesel engine, combustion systems and fuel injection development projects; and C. R. Schad, in charge of duties of organization, personnel and operational activities.

Floyd S. Adams of Ada, Oklahoma has been added to the sales staff of Worthington Pump and Machinery Corporation's Construction Equipment Division. Mr. Adams has been assigned to cover Texas and Oklahoma, handling the Blue Brute Line of portable air compressors, air tools, concrete pavers and mixers.

Lieutenant Commander Herbert F. McClure, U.S.N.R., recently discharged from the Navy, has been appointed sales engineer of the Hoist and Body Division of Gar Wood Industries, Inc., of Detroit.

Before joining the Navy in May, 1942, Commander McClure was for eight years associated with Fruehauf Trailer Co.

# Trade Literature

**The pieces of literature listed below can be obtained direct from the manufacturers named, or requests can be addressed to Pit and Quarry's "Service to Readers" Department.**

LUBRICATION, issue for November, 1945, devoted to a discussion on Low Temperature Sludge in Automotive Gasoline Engines. The Texas Company, New York City.

PLYLOCK BELT JOINT. 4 pages. Catalog section 2155. B. F. Goodrich Company, Akron, Ohio.

PIONEERS IN INDUSTRY. 160 pages. The story of Fairbanks, Morse & Company. Fairbanks, Morse & Company, Chicago.

POWER EQUIPMENT CONSTRUCTION COMPANY, INC. Descriptive leaflet of products manufactured by this firm; concrete and sand-and-gravel handling equipment, concrete mixers, bins and hoppers, conveyors and bucket elevators. Power Equipment Construction Company, Inc., Sarasota, Florida.

B. F. GOODRICH CORD BELT CARRIES 12,000,000 TONS OF AGGREGATE AT SHASTA DAM. 4 pages. The B. F. Goodrich Company, Akron, Ohio.

TATE JONES INDUSTRIAL FURNACES. 22 pages. Indexed information on reheat and heat treating furnaces, fuel oil and its use, gas as an industrial fuel. Tate-Jones & Company, Inc., Pittsburgh.

CENCO NEWS CHATS. Number 50. 20 pages. Central Scientific Company, Chicago.

GLOSSARY OF MACHINE SHOP TERMS. 30 pages. Kropp Forge Company, Chicago.

LUBRICATION WALL CHART. Form No. G-1067. R. G. LeTourneau, Inc., Peoria, Illinois.

NEW BIG-TIRED TOURNATRUCKS. 4 pages. R. G. LeTourneau, Inc., Peoria, Illinois.

WORTHINGTON VERTICAL TURBINE PUMPS. Bulletin H-450-B33. 12 pages. Worthington Pump & Machinery Corporation, Harrison, New Jersey.

P & H GRAB BUCKET CRANES. Bulletin C9-1. 28 pages. Harnischfeger Corporation, Milwaukee, Wisconsin.

E-M SYNCHRONOUS GENERATORS. 4 pages. Numbers 177 and 179. Electric Machinery Manufacturing Company, Minneapolis 13, Minnesota.

HOW TO GET THE MOST SERVICE OUT OF YOUR OFF-THE-ROAD TIRES. 43 pages. The B. F. Goodrich Company, Akron, Ohio.

MAXI "ONE-MAN" CRANE UNDERCARRIAGE. 4 pages. Bulletin CU-8-42. Six Wheels, Inc., Los Angeles, California.

AMSCO MANGANESE STEEL. 55 pages. Bulletin No. 844D. American Manganese Steel Division of the American Brake Shoe Company, Chicago Heights, Illinois.

WHAT THE FOREMAN NEEDS FOR SUCCESS. *16 pages. Published by the National Foreman's Institute, Inc., Deep River, Connecticut. Price, 25 cents.*

HOW TO TRAIN YOUR ASSISTANTS. *By R. W. Wetherill. 70 pages. Published by the National Foremen's Institute, Inc., Deep River, Connecticut. Price, 25 cents.*

Two readable booklets, attractively illustrated with humorous sketches, addressed to foremen, supervisors and executives.

AMERICAN INDUSTRY LOOKS AHEAD. *64 pages. Published by the Marketing Committee of the Committee for Economic Development, 285 Madison Avenue, New York 17, New York. Price, $1.00.* A business estimate of post-war markets for manufactured goods.

A HANDBOOK ON WAGE INCENTIVE PLANS. *Compiled under the direction of J. W. Nickerson and J. H. Eddy. 39 pages. Published by the War Production Board. Price, 10 cents.*

In a foreword, War Production Board Chairman J. A. Krug commends this manual to management, labor and all concerned with increasing American war production efficiency. He credits the use of wage-incentive plans with the four-fold increase in American monthly war production recorded between December, 1941, and December, 1944. Such plans are described as methods of paying workers for their extra efforts, rather than on the basis of the time they spend at work.

CONTROL OF QUALITY OF READY-MIXED CONCRETE. *76 pages. Published by the National Ready-Mixed Concrete Association, Washington, D. C. Available without charge.*

This manual is a comprehensive treatment of the problem of controlling quality, beginning with concrete at the source and including its treatment after delivery. Available without charge.

REHIRING YOUR COMPANY'S VETERANS. *35 pages. Published by the Research Institute of America, Inc., New York. Available without charge.*

A valuable analysis of a pressing problem, treating such topics as the retraining of veterans, solving seniority questions, planning a personnel policy for veterans, how to keep key employees, and handling the disabled veteran.

ILLINOIS RESOURCES. *Compiled by Morris M. Leighton. 185 pages. Published by the Illinois Post-War Planning Commission, Chicago. Available without charge.*

A graphic atlas of Illinois resources, including manufacturing, agriculture, minerals, water, forests, fish, game, power, transportation, trade, banking, population, tax systems, education and parks.

TEXAS LOOKS AHEAD. VOL. I, THE RESOURCES OF TEXAS. *By the members of the staff of the University of Texas. 365 pages. Published by the University of Texas, Austin, Texas. Price, $1.00.*

This publication represents the first of two volumes concerning post-war developments in Texas. The project seeks to acquaint the people of the state with the vast resources of Texas. Each of the 29 chapters deals with some vital aspect of the subject matter, and each was prepared by a specialist in the field. The book is profusely illustrated with drawings, diagrams, graphs, tables and maps.


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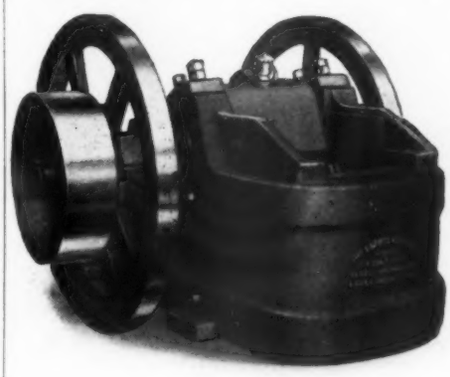
**Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.**



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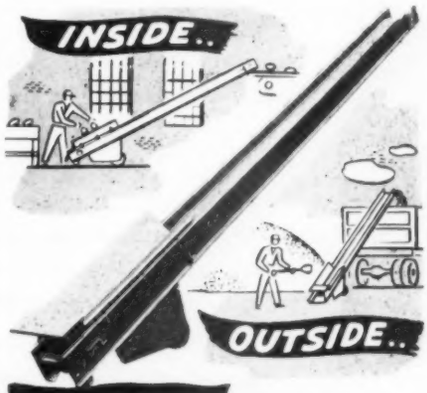


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Industries throughout the country are using CON-VAY-IT. Its use varies from the loading or unloading of sand to high speed handling of materials—metal parts, aggregate, chemicals, etc.—where cost and time are important factors. Four models: two belt widths—8 and 12 inch; two lengths—13 and 20 feet. For lifts too steep for a belt use FLIGHT-VEYOR.

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● In his first venture as a supplier of aggregate for highway contractors, Houston Clinton of Texas selected Pioneer equipment for the job. This job, which was an important highway project in Hill County, Texas—a connecting link in the Dallas-San Antonio highway—called for 60,000 yards of limestone crushed to 2½ inch for the base course.

To produce this aggregate a Pioneer 24 x 36 primary crusher with a 42-V reduction was used. Averaging between sixteen and seventeen hundred yards per 10-hour day. The operation consisted of crushing soft, white limestone rock which had seams in it, and some dirt had to be removed to meet Federal specifications as to plasticity and binder content. By having a small vibrator screen immediately under the traveling grizzly feeder on the primary unit, this dirt was removed successfully even though the material was wet.

The job was finished on schedule and the plant was shipped to Coleman County, Texas, and set up for another job of a similar type. Because both Pioneer units are mounted on pneumatic tires, making them highly portable, they were moved with a 2½-ton truck, eliminating high freight rates and holding moving costs to a minimum. An economical and profitable job, reports Houston Clinton—proving once again that you get extra margins of performance with Pioneer equipment.

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**Pioneer**
ENGINEERING WORKS

*for* QUARRY MINES GRAVEL

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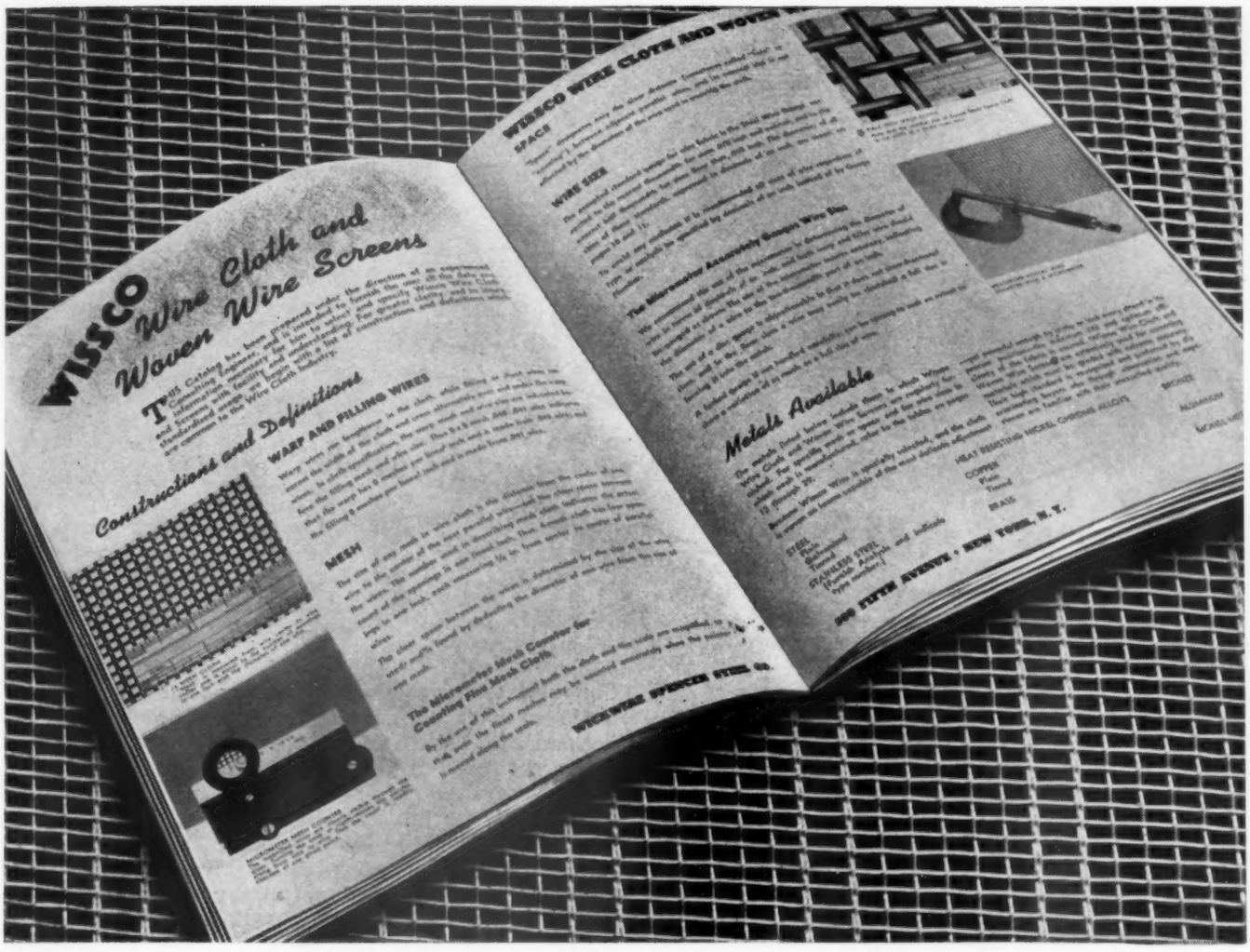


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If you are a user of wire cloth this book will prove exceedingly useful to you. In it you'll find all the technical information you need —types of weaves, screen capacities and efficiencies, wire sizes and other important data.

The information in this book represents the result of over 87 years experience in the manufacture of wire cloth. As a leader in the field, Wickwire Spencer serves over a hundred industries to which it supplies wire cloth in many different weaves for screening, filtering, separating, grading, cleaning and processing. We fabricate all commonly used metals into types of cloth to give longest service under chemical action, corrosion, abrasion, moisture or high temperature.

Our engineers will be happy to serve you in the solution of your wire cloth problems. Just write Mechanical Specialties Division, Wickwire Spencer Steel, Sterling St., Clinton, Massachusetts.

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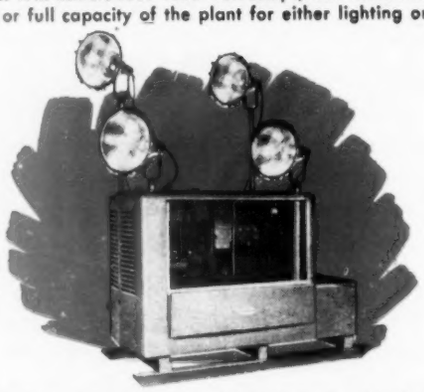
**Use Consolidated portable searchlight units with auxiliary power**

5 K.W. Consolidated Portable Searchlight Unit. Furnished trailer or skid mounted. Will handle four 1000 watt lamps, with 1000 watts of reserve power or full capacity of the plant for either lighting or power.



10 K.W. Consolidated Portable Searchlight Unit. Furnished trailer or skid mounted. Will handle up to ten 1000 watt lamps or will furnish 10,000 watts of auxiliary power.

**Consolidated's gasoline-driven floodlight units cut costs and corners by furnishing dependable, brilliant light where and when you need it for night operations. Trailer-mounted on pneumatic tires, the unit is fully portable and is easily towed from one part of the job to another. This self-contained lighting plant eliminates the necessity of erecting temporary poles and stringing cables from distant power supply . . . a precarious practice in many construction jobs.**

**In addition to furnishing day-like light from its chassis-mounted floods, outlets are provided for taking off auxiliary electric current to operate small hand tools, pumps, etc. Lamps are removable for mounting wherever needed. You reduce operation time-lags, cut over-all job costs and eliminate the possibility of power failures—if you maintain Consolidated Floodlight Units on your job.**

***Consolidated's two models are shown. For full particulars write for our latest bulletin or contact our agent who is nearest to you.***

## HERE ARE OUR DEALERS WHO ARE READY TO SERVE YOU.

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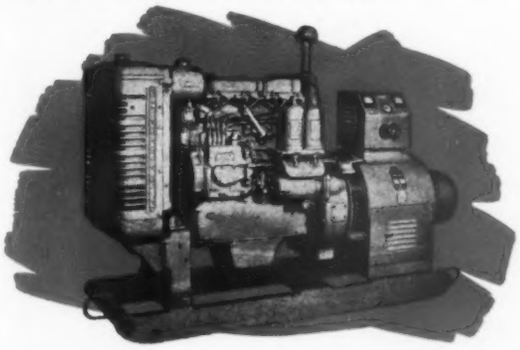
# Consolidated Power Units

## 2 for LOW-COST POWER

**Use Consolidated portable Diesel power units**

Four Wheel Trailer Mounted Diesel Generators in sizes 10 to 75 K.W.; four Gasoline Generators in sizes 20 to 30 K.W. Two Wheel Trailer Mounted Gasoline Generators in sizes 5 to 15 K.W.



Skid Mounted Diesel Generators in sizes 10 to 75 K.W.; Gasoline Generators in sizes 5 to 30 K.W. Available as open or totally enclosed units.

**Consolidated Portable Generator Sets, either gasoline or diesel driven, are complete electric power plants ready to bring the source of power directly to the job, without stringing cables—without delaying operations—without costly shut-downs from power failures.**

**Consolidated units, engineered to withstand continuous, rugged service, incorporate many of the refinements found in large stationary generators. Powered by world-famous International Harvester diesel engines, they are complete with all the necessary components for easy, quick on-the-spot location – and dependable low-cost operation at approximately 1¢ per K.W.H. Consolidated Portable Generator Sets are available in sizes from 5 K.W. to 75 K.W., AC or DC, all standard voltages. If the wide selection of models does not meet your requirements, ask about our custom-built service.**

***For complete data sheets, write us or our agent who is nearest to you.***

CD-101

# CONSOLIDATED DIESEL ELECTRIC CORP.

MOUNT VERNON, N. Y. • Branch Offices: CHICAGO, WASHINGTON, D. C.



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A Complete Meckum Designed and Built Dredge
Using the Meckum Steel Sectional Dredge Hull

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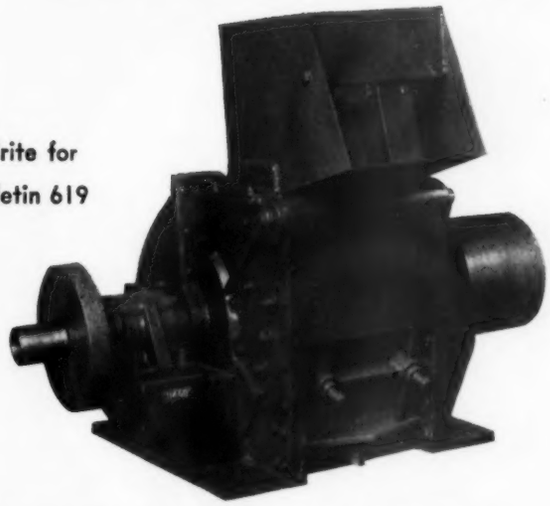
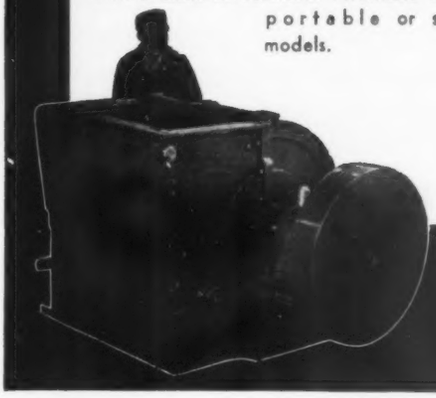
reduces **"ONE-MAN"** size stone to 1¼", ¾" or agricultural size in **ONE OPERATION**

Here's the all-purpose hammer type pulverizer for crushing agricultural limestone, concrete and road stone. WILLIAMS "Slugger" provides continuous, high-capacity production of uniformly sized material. Unit is extremely rugged and economical to operate. The ideal crusher for supplying a wide market demand with a small investment. Available in 7 sizes, portable or stationary models.



Write for Bulletin 619



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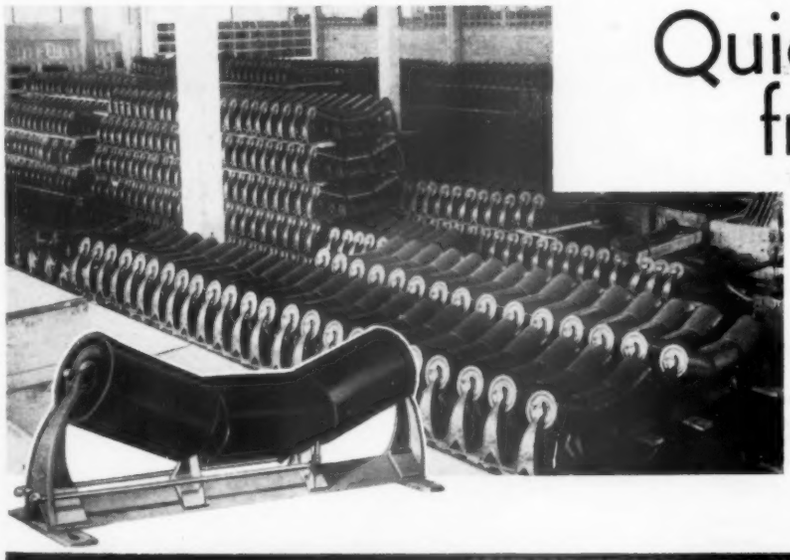

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50-B

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*Williams Type* **BUCKETS**

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A WORLD OF CONFIDENCE
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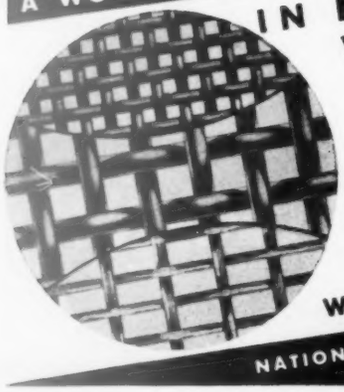

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. . . for a dependable, long-wearing, non-crystallizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

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Surplus equipment
Faster through the
Pit & Quarry
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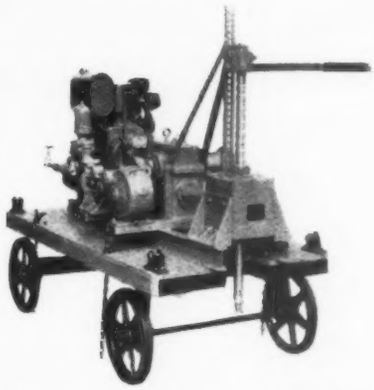
Send for Our Rate Card



*EARTH AUGERS — SAMPLERS*

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★ Complete line of tools and equipment for pit and quarry prospecting and all sub-surface exploration.

★ Determine, accurately, the depth, quality and extent of sand, gravel, clay, shale and alluvial deposits.

★ Cores recovered from rock permit visual inspection—laboratory analysis and test.

★ Combine prospecting with blast hole drilling.

★ Acker Core Drills are simple to operate—do the job quicker and at lower cost per foot.

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**ACKER DRILL COMPANY**

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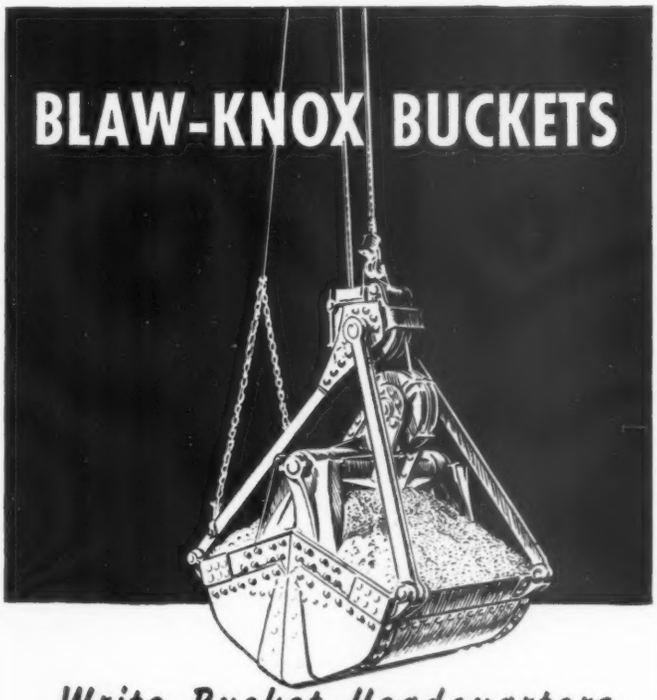
## BLAW-KNOX BUCKETS

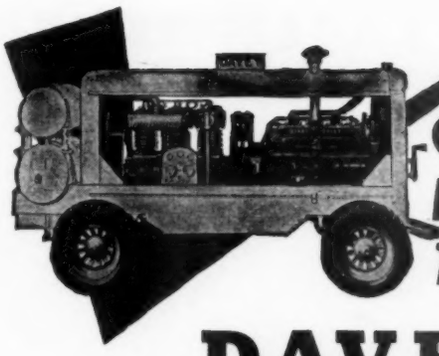


*Write Bucket Headquarters*

Whatever the job, Blaw-Knox provides a bucket that gets more work done with less crane time . . . Over 100 types and sizes ! Write for Catalog **1757.**

**BLAW-KNOX DIVISION of Blaw-Knox Company**

2004 Farmers Bank Bldg., Pittsburgh, Pa.



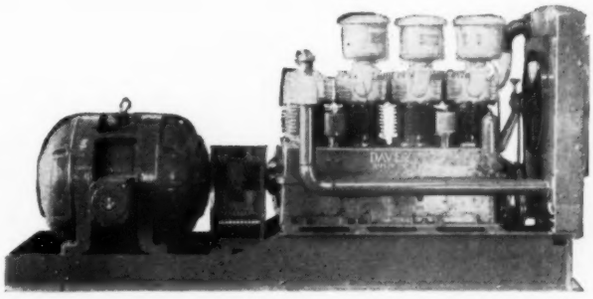
## CHECK IT BY ANY TEST - -

# DAVEY

## AIR ARISTOCRAT

Our invitation to subject the Davey Compressor to the acid test of comparison is backed by the fact that it will deliver its rated output over a longer period of time than any other compressor, that its long-run cost is less.

Davey guaranteed-for-life valves are just one of the many reasons for the superiority of Davey Compressors. Davey conservative-speed operation is another big factor adding to its famous economy and long, trouble-free service. Add other Davey engineering features such as welded steel frame, aluminum alloy cylinder heads and automotive-type steering and you can readily see why we invite product comparison.



### THE DAVEY INDUSTRIAL COMPRESSOR

The Davey Industrial Compressor is the quality leader among stationary air compressors because of the same exclusive Davey engineering features found in the trailer-mounted Air Aristocrat. For those tough pit and quarry jobs where maximum efficiency depends on a maximum air supply twenty-four hours a day, year after year, the Davey Industrial Compressor has no equal in sustained top performance, minimum maintenance and long-run economy.

★

**Write for Catalog E-172,** which illustrates and describes the complete line of Davey performance-engineered Air Aristocrat Compressors, Auto-Air Compressors, Industrial Compressors, Heavy-Duty Truck Power Take-Offs and Pneumatic Saws, plus valuable pneumatic engineering data.

D-945-208

**DAVEY** *Compressor Co.*

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THAT'S LONG-LASTING STRONG FASTENING

Heavier U-bolt and forged base are hot dip galvanized. In sizes from 1/8" up, and conveniently available everywhere. A product of the American Hoist & Derrick Co. of St. Paul.

# CROSBY CLIPS

It Scoops
It Hoists
It Loads

That's the
## TRUK-LODER
for quick jobs

Fast as 15 or 20 shovelers — Loads a truck in 2 to 3 minutes
Fits on any type of truck

GENERAL UTILITY LOADING DEVICE

TRUK-LODER is especially recommended for contractors and communities. It's the working equal of a large and costly shovel in loading gravel, crushed stone, etc. For those requiring a shovel for short intervals, it can be detached quickly by removing two hinge pins and the truck put back into regular hauling service.

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# NOW! P&H Hard-Facing Electrodes To Match Desired Rockwell "C" Hardness

"Harcote 20" Rockwell C Hardness 15-25
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**P&H** now makes hard surfacing a simpler, easier job — *easier* in the selection of the correct electrode . . . *easier* to get the desired as-welded hardness.

These four *new* P&H "Harcote" Electrodes do it! For now Harcote is available in a type having the exact degree of Rockwell C hardness for the job. If the job calls for a Rockwell C hardness of 55 — just order and use Harcote "55". That's all there is to it! No guesswork—no confusion. Simply specify "Harcote" according to the corresponding number of Rockwell "C" hardness desired.

SAVE TIME — SAVE EQUIPMENT
— USE P&H HARCOTE

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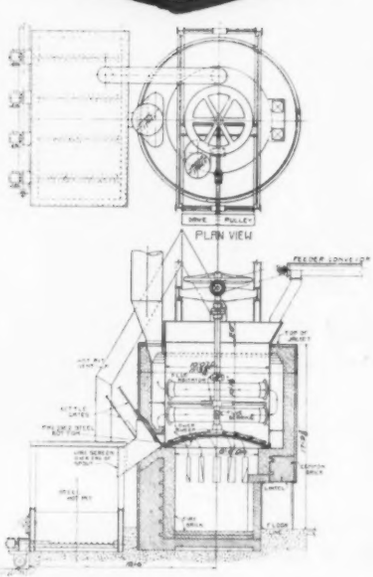
## EHRSAM CALCINING KETTLE ... STANDARD
for the
GYPSUM PLASTER INDUSTRY




**SIZE**
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**HIGH**
Thermal Efficiency

**STURDY**
Agitating mechanism

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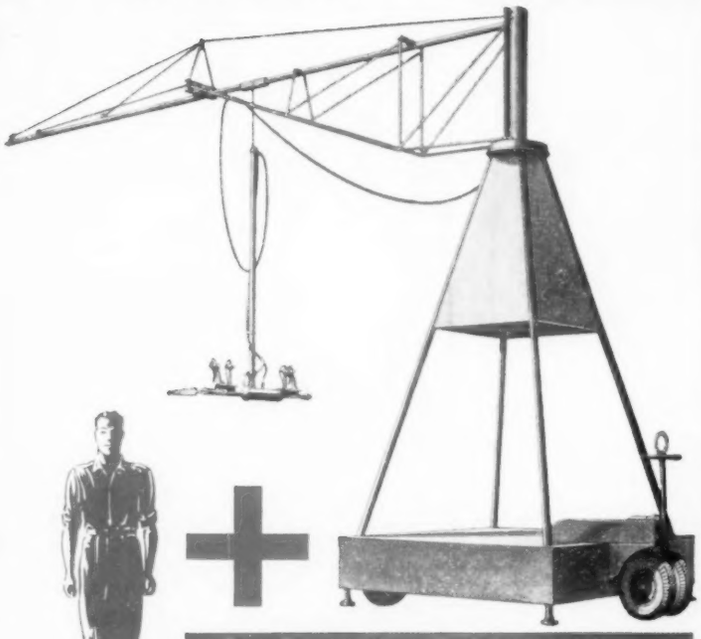
Consult EHRSAM on special problems in material handling and processing. EHRSAM Crushers, Screens, Mixers, Feeders, Hair and Fibre Pickers, Power and Transmission Machinery, and Elevating and Conveying Equipment for every purpose.

**THE J. B. EHRSAM & SONS MFG. COMPANY**
ENTERPRISE, KANSAS

February, 1946

The CONCRETE MANUFACTURER

A Special Section of...



One Man with a STEARNS-Warren

# YARDHOIST

PATENTS PENDING

easily handles 800 block per hour!

FOR HANDLING CURED BLOCK from racks to stock pile or from stock pile to trucks, there is positively no equipment that can equal the proven performance of this much publicized YARDHOIST.

YARDHOIST IS QUICKLY SPOTTED IN ANY PART OF THE YARD . . . Available as illustrated, or without wheels with base arranged for lift truck transportation. It eliminates hand labor . . . minimizes block breakage . . . speedily handles more than 800 8 x 8 x 16-in. blocks per hour. Multiples of other sizes handled with same relative speed.

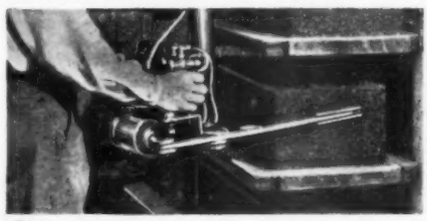
Compressed air supplied by hose from plant or gasoline-driven compressor mounted on Yardhoist base.

**Orders, dated as received, will be filled in sequence . . .**
**FIRST COME, FIRST SERVED**

**STEARNS**

GENE OLSON, PRESIDENT

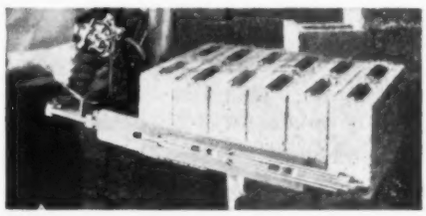
**OUTSTANDING FEATURES**
**covered by patents pending are as follows:**



**1** Its ability to pick up block from racks without top clearance. That is, the block can be removed from fixed deck racks FROM THE SIDE, without removing or raising any decks.

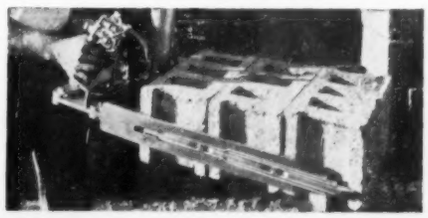
Illustration shows clamp gripping 8 x 16" face of block.

**2** Its ability to rotate through a vertical plane permits block to be stacked without leaving spaces between them. This enables the operator to stack block in any desired position and gives general flexibility and ease of operation not possible without this feature.



**3** Its ability to pick up block by gripping the cored or the plain ends. Naturally, the clamp must grip the ends of the block when their 8 x 16" faces are exposed to the operator on the working side of the rack. See photographs above and below and note the difference in the design of the clamp required for end handling.

Time required for changing clamps is negligible.



**Without ALL of these outstanding features no yard handling device can approach YARDHOIST in utility.**

# SNOWBALL FACTS applied to CONCRETE BLOCK

MANY block manufacturers have found that Atlas Duraplastic air-entraining portland cement imparts to the green product a rubbery consistency that permits the use of more water in mixes suitable for concrete block making. This provides several advantages.

Just as a wet snowball packs tighter than a dry snowball—so the wetter mixture permitted by Atlas *Duraplastic* Cement produces a more thoroughly compacted block which results in—

- **Less cracking of green block**
- **Less breakage of green block**
- **Less falling down of green block**
- **Fewer throwbacks**
- **Better appearance**

An increasing number of Concrete Block manufacturers are now using Duraplastic air-entraining portland cement for their entire production. Concrete-block mixes containing this cement can be handled satisfactorily and efficiently by any of the commercial block machines.

Send for further information. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, New York.

• • •

**OFFICES:** New York, Chicago, Albany, Boston, Philadelphia, Pittsburgh, Cleveland, St. Louis, Minneapolis, Duluth, Kansas City, Des Moines, Birmingham, Waco.

## Atlas DURAPLASTIC Cement

TRADE MARK REG. U. A. C. CO.

***A Universal Atlas Product***

PQ-D-27

SUNDAY EVENINGS—*American Broadcasting Company (Blue) Network—U. S. Steel's "The Theatre Guild on the Air"*

# The CONCRETE MANUFACTURER

FEBRUARY, 1946

Vol. 9 No. 8

A MAGAZINE DEVOTED TO PRODUCTION OF CONCRETE PRODUCTS AND READY - MIXED CONCRETE

CCA

Published by Pit and Quarry Publications
538 South Clark St. Chicago 5



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## Stewart and Wolf Appointed by P.C.A. To Engineering Posts

Two new additions have been made recently to the staff of the Housing & Cement Products Bureau of the Portland Cement Association. They are Clyde L. Stewart, Jr., and

C. L. Stewart, Jr.

W. W. Wolf

Walter W. Wolf, both graduate engineers and both officers in the armed forces just prior to joining P.C.A.

Mr. Stewart, who has had considerable research experience with the Indiana State Highway Department and the U. S. Engineers Corps, will probably take part in the association's research studies on drying and curing concrete masonry units.

Mr. Wolf, whose experience has been largely in the contruction field, will for the present devote his time to cast-in-place concrete construction.

## Mississippi Concern Builds $150,000 Plant

Construction has begun on a $150,000 concrete and asphalt mixing plant by the Jackson Ready Mix Concrete Company at Jackson, Mississippi. The daily capacity of the plant is expected to be 1,200 cubic yards, and operation is scheduled to begin on March 1.

## N.C.M.A. General Office In Chicago to Be Moved

At the meeting of the National Concrete Masonry Association's executive committee in Chicago on December 15 it was decided to remove the association's general office from the Portland Cement Association headquarters to another location. This action has become necessary because of the expansion of N. C.M.A. activities. The committee also planned some of the details of the program to be presented at the annual convention in March.

## Home Builders, P.C.A., To Sponsor Exhibit

At the National Association of Home Builders meeting on February 25-28, to be held at the Stevens Hotel in Chicago, the National Concrete Masonry Association, in cooperation with the Portland Cement Association, will sponsor an exhibit featuring concrete masonry construction. The show will be of unusual significance this year because of the acute housing situation.

## Cast Stone Institute Convention Postponed

The annual convention of the Cast Stone Institute, originally scheduled for March 11 and 12 at the Bismarck Hotel in Chicago, has been cancelled. The meeting will be postponed, the dates to be announced later.

## Coming Events

*February 18-21, 1946 — Buffalo.* Annual convention, American Concrete Institute, Statler Hotel.

*February 25-28, 1946 — Chicago.* Annual meeting and show, National Association of Home Builders, Stevens Hotel.

*February 25-March 1, 1946—Pittsburgh.* Spring meeting, American Society for Testing Materials.

*March 12-14, 1946—Chicago.* Annual conference and exposition, National Concrete Masonry Association, Sherman Hotel.

*April 11-13, 1946—Chicago.* Annual meeting, American Concrete Pipe Association, Edgewater Beach Hotel.

*June 24-28, 1946—Buffalo.* Annual meeting, American Society for Testing Materials and exhibit of testing apparatus and related equipment.

## Make Reservations Now for N.C.M.A. Meet at Chicago, Mar. 12

Members of the National Concrete Masonry Association planning to attend the annual convention on March 12 to 14 in Chicago are urged to make reservations in advance at the Hotel Sherman, convention headquarters. Application for accommodations should be directed to Earl Benedict, Hotel Sherman, Chicago, and should include names of persons desiring rooms, the kind of accommodations wanted and the time of arrival and departure.

## Empire Concrete Products To Have $25,000 Factory

A $25,000 factory for the manufacture and sale of hollow concrete building tile is being constructed in Moscow, Idaho, by the Empire Concrete Products Co., according to a recent announcement. Owners of the firm are Fred H. Simpkin and Leo F. McCarty. Mr. Simpkin is completing four years in the Army Air Corps. Scheduled to be ready by February 15, the new plant will have a capacity of 4,000 blocks a day.

## $180,000 Expansion Begun by Atlanta Firm

At the Atlanta Aggregate Company, Inc., Atlanta's first producer of ready-mixed concrete, a new concrete block plant has been added to the firm's facilities in a $180,000 expansion program.

The newly completed plant, which was begun in June, 1945, houses a truck repair shop, shower and locker rooms for employees and remodeled office space. Facilities for unloading and handling crushed stone, roofing slag, gravel, mortar sand and other materials now are being remodeled and improved.

The production of concrete blocks and brick now is accomplished on a two-shift basis. High-capacity Besser block machinery and the latest conveying methods are now being utilized to speed up production. The daily block and brick output is estimated to be equivalent to the number of units needed for seven 6-room houses. Eight steam-curing rooms of unique design are in use. With the addition of another block machine, the daily output will be stepped up to a quantity of blocks sufficient to build nine 6-room homes.

The recent improvements also enable the company to supply larger volumes of ready-mixed concrete and mortar. The expanded operations necessitated the addition of 32 workers to the payroll and the purchase of five delivery trucks. H. E. Shaw, president of the company, who supervised the construction and engineering details of the new facilities, will direct operations at the block plant and the concrete and mortar plants.

## Water-Proofed Mix Used in New Blocks

At the Auburn Concrete Products Company of Auburn, Washington, a new process has been perfected for the manufacture of building block from plastic, water-proofed concrete mixture. The process includes a machine, for which a patent is pending, that vibrates the wet material into a form. Immediately after it has been shaped in the form, the mold is removed and the unit is placed between processed wooden frames; later it is taken into the open for further curing. No additional water-proofing is done.

The product is said to be lightweight, sturdy and easy to lay. It is also claimed to have an unusually low water absorption figure.

## Committee Authorizes Concrete Masonry Exhibits

The National Concrete Masonry Association's executive committee has reversed an earlier decision to dispense with an exhibit at the coming convention, to be held in Chicago, March 12 to 14. There will be a limited exhibit, based upon the accompanying floor plan.

## O.P.A. Investigates Illicit Block Prices In Newark Area

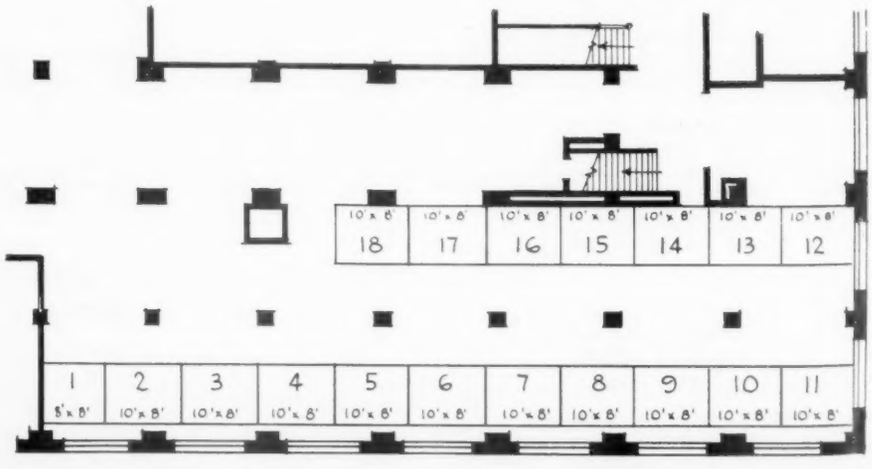
In the Newark, New Jersey, area the Office of Price Administration recently launched an investigation of black market operations in the concrete block industry. District Director Tarrant revealed that the racket had interfered seriously with housing for war veterans. He stated that blocks had been sold for as much as 30 per cent. above the O.P.A. ceiling price and added that the agency was considering placing a flat dollars-and-cents ceiling on blocks and other essential building materials. Such an arrangement would replace the current freeze regulation.

## Juneau Firm Enlarges Territory of Operation

The Territory Equipment & Supply Company of Juneau, Alaska, is reported to be building a new warehouse and plant which will expand its field of operation considerably. The firm, owned by A. B. Hicks and John F. Cushing, Jr., has purchased two ready-mix trucks for the transportation of concrete to be mixed in transit.

## Fernald Moves Plant In Expansion Program

Facilities of the Fernald Concrete Products Company's plant will be moved from New Port Richey, Florida, to Tarpon Springs, according to Leon Fernald, owner-operator of the plant. In addition to "Trulay" building blocks, the plant will turn out roofing tile, water troughs, feed troughs and similar items. Crushed stone and sand also will be sold.



# National Ready Mixed Concrete Assn. Meets at Cincinnati—Considers Needs Of Producers in Post-War Period

another ON THE SPOT report

MEETING at the Netherland Plaza Hotel in Cincinnati, January 23 to 25, during the week of the convention of the National Sand & Gravel Association, members of the National Ready Mixed Concrete Association had the opportunity of participating in the sessions of both conventions, the programs of which were arranged, as they have been in recent years, to provide for two joint sessions dealing with subjects of interest to both groups and for special sessions devoted to problems of specific interest to those groups individually. The joint sessions held on Wednesday afternoon, January 23, and the morning of the next day, dealt with the construction outlook, the role of public works, the Walling ruling which extended the coverage of the Fair Labor Standards Act, surplus property, federal taxes in 1946, and the controls imposed on both industries by the Office of Price Administration. To avoid repetition, the report which follows will treat only of the separate sessions of the ready-mixed-concrete association convention, while the report of the joint sessions will be found in the main section of this issue of PIT AND QUARRY in the article devoted to the convention of the National Sand & Gravel Association.

Seated, left to right: W. E. Pohlman, American Aggregates Corp., Columbus, Ohio; C. E. Kuhlman, Kuhlman Builders Supply & Brick Co., Toledo; Claude Clark, Ohio Sand & Gravel Assn. and Ohio Ready Mixed Concrete Assn.; Perry T. Ford, Ohio Highway Director; A. W. Kimmel, Dayton Ready Mixed Concrete Co.; Stephen Stepanian, Arrow Sand & Gravel Co., Columbus, Ohio. Standing: Alexander Foster, Jr., Warner Co., Philadelphia.

**President's Address** Alexander Foster, Jr., president of the association, presided at the first session and made the opening address. Mr. Foster reviewed briefly some of the outstanding problems that confront the ready-mixed-concrete industry in the post-war world, and he warned his listeners that business men and industrial leaders have too long relied upon government to solve their problems. Too often, he said, the solutions worked out in Washington have not been in the best interests of business, and he urged an early return to self reliance. He expressed, however, approval of the continuation of price controls until normally competitive conditions have been reestablished.

Recalling that the Nazi party was created largely from the discontent of young German soldiers who were left at loose ends at the conclusion of World War I, Mr. Foster urged employers in the ready-mixed-concrete industry to act promptly to reabsorb returning war veterans. If the problem is to be handled properly it must be met immediately with a deep understanding of the needs and the rights of the individuals involved, Mr. Foster said.

C. W. Shirey (right), Waterloo, Ia., new president of the National Ready Mixed Concrete Assn., and C. Dolly Gray, Ready Mixed Concrete Corp., Indianapolis, new treasurer of the N.R.M.C.A.

In regard to the industry's technical problems, the speaker foresaw an immediate need for more accurate control of batching in ready-mixed plants. In the future, he said, producers will have to store many types of cement and be prepared to supply a multiplicity of mixes. In this connection he urged that the industry do everything in its power to bring about an early standardization of mixes.

**Executive Secretary's Report** Vince P. Ahearn, executive secretary of the association, reported that membership stands at the highest level in the organization's 15-year history. This gratifying growth, he said, has come about largely because old members have brought in new ones.

Mr. Ahearn disclosed that the 1947 convention will be held in Los Angeles at a time and place still to be determined. The meeting will probably be held in late February or early March, since hotel accommodations are not available in January. There will be no machinery exhibit next year, and it is the intention in the future to hold exhibits in alternate years instead of every year as was done in the past.

**Labor Relations** The speaker expressed the opinion that the manpower problem in the ready-mixed-concrete industry is not as acute as in most other industries. Pointing out the importance of holding out the hope and promise of advancement to young employees. Mr. Ahearn urged his listeners to upgrade employees wherever possible, and to avoid at all costs entering into closed shop agreements which would prevent upgrading.

In discussing the Walling ruling which extends the application of the Wage and Hour Act beyond the previously accepted limits, Mr. Ahearn revealed that the association has engaged counsel to contest all suits involving this principle. He expressed the hope that producers who are faced with claims for back wages under the Walling interpretation will cooperate with the association's counsel in contesting such suits. Under the present law, he said, claims can be dated back to October 24, 1938, when the Wage and Hour law became effective.

**Controls Price** Mr. Ahearn predicted that price control will be extended for at least 6 months to January 1, 1947, and possible for another full year beyond that date. Where existing price ceilings inflict undue hardship, he urged producers to seek area relief under MPR592, pointing out that O.P.A. fully recognizes the importance of the ready-mixed-concrete industry in the construction program.

According to the speaker the industry's output in 1945 is unknown at present. He asserted that despite its manifold problems the industry's performance during the war years had been excellent. There exists now, he said, a widespread need for the rehabilitation of plants if a similar record is to be achieved in the huge construction program ahead.

**Research Program** Stanton Walker, the association's director of engineering, followed Mr. Ahearn with a report on various aspects of the technical work carried on under his direction. He described the laboratory research program which was authorized by the board of directors at their meeting in New York last year. The first year, he said, has been largely devoted to the training of a research associate to work in the laboratory at the University of Maryland. A number of problems related to air entrainment have been studied, and five preliminary reports on findings were distributed to those in attendance at the convention.

Mr. Walker disclosed that laboratory tests so far have indicated that

Herb Jahncke, Jahncke Service, Inc., New Orleans, La.; Murray S. Simpson, Super Concrete, Washington, D. C.

air entrainment of about 3 per cent. is sufficient to improve durability and plasticity of concrete without excessive loss of strength. Grading of aggregate, time of mixing, weather conditions and temperature all seem to have important effects upon air entrainment, and there is much to be learned about these factors according to Mr. Walker.

The speaker revealed that an altogether new method of measuring the amount of air in concrete has been worked out in cooperation with the American Concrete Institute. Unlike most procedures currently in use, the new method is not dependent upon accurate knowledge of what goes into the batches. Details of the method will be disclosed at the meeting of the American Concrete Institute in March.

**Specifications** In regard to specifications Mr. Walker said that the more serious problems are well on the way to being solved, and that there is evidence of an encouraging trend toward greater uniformity. He referred to the important work being done by the association's various technical problems committees and to the successful effort of the Mixer Manufacturers' Bureau to arrive at standard sizes and capacities of truck mixers.

**Safety Contest** H. F. Thomson (General Material Company) told those assembled of his committee's plans for a safety contest to be conducted among ready-mixed-concrete manufacturers. He explained the unusual nature of such a contest when applied to this industry because of the types of hazards encountered. Although his committee had not had time to discuss it fully, he described briefly a plan that had been proposed. This contemplates two independent contests based on the volume of concrete production. Entries in Class A will be those companies whose production is in excess of 25,000 cubic yards in the year; Class B will comprise those having smaller annual outputs. The figure of 25,000 cubic yards is purely arbitrary and probably should be raised, he said.

The contest would be scored in four parts: (1) accident frequency rating of personnel at the plant, 15 points; (2) accident frequency rating of personnel engaged in delivery, 35 points; public liability rating, 20

Left to right: Robert O'Bryant, Oscar Lindquist, Jack Staley, all of the Rock River Ready Mixed Concrete Co., Dixon, Ill, and C. W. Shirey, Waterloo, Iowa.

points; (4) property damage rating, 30 points.

Mr. Thomson said that each participant in the contest would report to the association monthly and that a coded report showing the relative standing of each contestant would be sent to him monthly. A summary, giving awards at the end of each year, would be developed by the association. As an incentive for participating, he added, PIT AND QUARRY had offered to provide trophies.

**Board Meeting** At its meeting on January 24 the board of directors of the National Ready Mixed Concrete Manufacturers considered numerous problems of interest to members of the association and the industry. One of the first actions taken by it was its decision to extend the organization's research activities by providing for a research fellowship at the University of Maryland.

The Chassis Committee, of which H. F. Thomson is chairman, has been studying the problem of trucks designed specially to meet the requirements of ready-mixed-concrete manufacturers. Stronger frames, less power, and the provision of a satisfactory side power take-off are some of the features desired by producers but not available in stock models.

The board chose G. K. Viall (Chain Belt Company) to serve as chairman of the Truck Mixer Manufacturers' Bureau for 1946.

The nominating committee submitted the names of the following candidates to direct the affairs of the association: President, Charles W. Shirey; F. P. Spratlen, Jr. (Ready Mixed Concrete Company, Denver); treasurer, C. Dolly Gray (Ready Mixed Concrete Corporation, Indianapolis); and as new members of the board of directors: William Moore (J. P. O'Connel Company, Boston); Norman J. Fredericks (Koenig Coal & Supply Company, Detroit); John Murphy and George Ely, Jr.

**BY a vote of two to one in favor of the employer the United States Circuit Court of Appeals for the Tenth Circuit has reversed the decision of the Federal District Court in the E. C. Schroeder Company case. The lower court had upheld the ruling known as A-14, issued in March, 1945, by L. Metcalfe Walling, Administrator, Wage and Hour and Public Contracts Divisions, United States Department of Labor. As a result of the decision the ruling will not be enforced in the Tenth Circuit.**

**The A-14 ruling brought within the coverage of the Fair Labor Standards Act all work done in producing materials for what it termed "interstate facilities", such as highways, railways, etc., and is of great importance to the aggregate (sand-and-gravel and crushed-stone) and ready-mixed-concrete industries as well as others. It laid open to suit for back pay hundreds of producers who do not ship their products across state lines and who, for that reason, had considered themselves as not covered by the act.**

**It is not known whether Mr. Walling will take an appeal to the United States Supreme Court immediately or whether he will await the decisions of courts in other districts.**

The board appointed a new Executive Committee to be made up of the officers elected at the convention and the following producers: E. K. Davison (J. K. Davison & Brother, Pittsburgh), T. E. Popplewell (Fort Worth Sand & Gravel Company, Inc., Fort Worth), Joseph M. Scheinin (James A. Norton, Inc., New York), and Julius J. Warner (Richter Concrete Corp., Cincinnati).

**Collective Bargaining** At the Friday morning session, presided over by Robert C. Collins (The Warner Company), Executive Secretary Ahearn discussed at length *Collective Bargaining Problems in the Ready-Mixed-Concrete Industry*. He said that there is actually little opportunity for collective bargaining and, as an example, cited the fact that the average labor-union business agent comes to the employer with a scissors-and-pastepot type of contract made up of paragraphs clipped from other contracts, claiming that the contract offered is like contracts that have already been signed by employers elsewhere. Mr. Ahearn cautioned his audience against accepting such contracts on the basis of false claims regarding what other employers have allegedly done, and urged them to communicate immediately with the association's Washington office to learn the truth before taking action. The ready-mixed-concrete manufacturer who signs a bad union contract compromises all other producers, he said.

Contractors are still under government wage control, Mr. Ahearn reminded his audience, and approval is required before wage rates can be increased. The ready-mixed-concrete industry is not subject to the Davis-Bacon Act, which applies only to employees who work on the construction site. Working for ready-mixed-concrete manufacturers is considered more desirable than working for contractors because that is more regular.

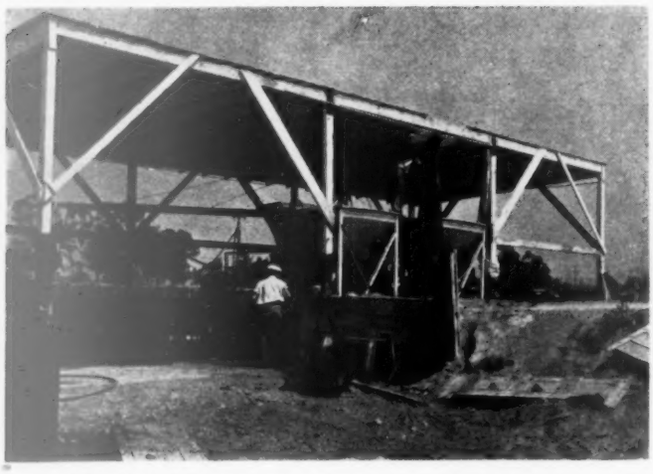
Union business agents, according to Mr. Ahearn, are trying to take over a part of management's function when they ask for the right to prevent the discharge of union members unless such action is acceptable to them. Mr. Ahearn advised employers to establish some grievance adjustment machinery at the superintendent level.

With respect to arbitration Mr. Ahearn said that some contracts provide that any grievance on the part of the workers must be arbitrated, and warned of the danger of wage rates being considered a grievance subject to arbitration. Contracts providing for grievance arbitration should limit the area of arbitration, so that the arbitrator's jurisdiction will not be too broad.

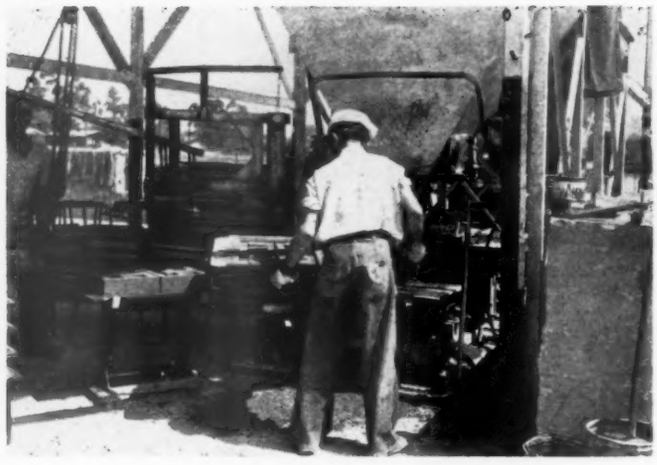
(*Continued on page* 138)

Left to right: C. J. Shepherdson, Virginia Concrete Co., Arlington, Va.; H. F. Thomson, General Material Co., St. Louis; C. P. Maloney, Sr., Maloney Concrete Co., Washington, D. C.; and C. P. Maloney, Jr., Virginia Concrete Co., Arlington, Va.

# PURCHASED READY-MIXED CONCRETE USED IN NEW PRODUCTS BUSINESS



View of Pacific Concrete Products Company plant at Roscoe, California, showing two hoppers and ramp where truck-mixer discharges.



One of the company's two vibrator-type block machines, fed by a hopper into which trucks deliver ready-mixed concrete.

another ON THE SPOT report

A CONCRETE-BLOCK plant without a concrete mixer!

That is the most unusual feature of the new plant of the Pacific Concrete Products Company which started operations at Roscoe, California, in the San Fernando Valley a few miles north of Los Angeles in August, 1945.

Attractive signboard on the company's grounds.

When this new concern began planning its new plant, it studied several of the leading installations in southern California. Noting the lack of standardized methods of proportioning the concrete materials, particularly the accurate measurement of the mixing water, and the apparent variation in strengths in the resultant product, the owners determined to remedy this in their plant by purchasing truck-mixed concrete of uniform specification and guaranteed strength.

A concrete technician was engaged to design a suitable mixture and arrangements were concluded with the Arrow Rock Company to supply concrete on a regular schedule from its batching plant scarcely a mile distant from the new block plant. Being familiar with the high quality concrete turned out by the ready-mixed industry through experience (the owners had been engaged in general contracting for several years), they reasoned that units manufactured from certified concrete would have a distinct advantage over those made by hit-or-miss mixing methods. That this selling argument is a convincing one is shown by the fact that the plant has proved a success from the start in a highly-competitive marketing area; and already the concern is planning to expand. Two more molding machines are shortly to be installed, making a total of four.

**By HARRY F. UTLEY**

Truck-mixer emptying concrete into one of the hoppers.

The truck-mixer arrives with a 3-cubic-yard load of concrete on schedule every 50 minutes, backs up a ramp and discharges the material into two steel hoppers, each of 3-cubic-yard capacity. A delivery slip is left by the truck-mixer driver with each load. It shows that specifications calling for 6,900 pounds of sand, 3,200 pounds of pea gravel, 15 sacks of Monolith plastic cement, and 95 gallons of mixing water have been complied with.

Hand-operated gate valves with quick cut-offs feed the Flam "Challenger" vibrating block machines located immediately below the concrete hoppers. One of the machines molds four 4- by 8- by 12-inch units at a time; the other makes six 4- by 6- by 12-inch units in a single operation. The blocks are stripped onto

(*Continued on page* 134)

Turret-type lift truck is operated by a 4-horsepower air-cooled gasoline engine.

# How Cleveland Block Maker Built New High-Temperature Curing Kilns

By HAROLD GEIST

another P AND Q exclusive

AMONG the progressive plants in the country now engaged in expanding their block-producing facilities is The Geist Coal & Supply Company of Cleveland. Herb Geist, President, is well known as the man who perfected the labeling and trade-marking of blocks, and who evolved the cube method of loading and presented it in convention in 1942, since which time it has been improved and developed by numerous manufacturers in all parts of the country. With the same thoroughness and vision that has marked their other developments, the Geist company was determined to engineer their new additions with the best designs now known.

The curing of blocks is one of the hottest subjects under debate in today's dynamic block industry. Forced by a rapidly-increasing demand to reduce as much as possible the time between manufacture and delivery, the industry has experimented widely in curing methods.

Under the wing of the National Concrete Masonry Association, and with additional assistance from the Portland Cement Association, a Curing Committee has made tests on the problems of accelerating curing, increasing early strength, reducing moisture content and eliminating the problems caused by expansion and contraction.

Herbert F. Geist has been president of the firm since incorporation in 1909.

Operations of the Curing Committee have covered a wide field in trying to solve these problems. Types of heat, length of time necessary to cure blocks, maximum and minimum temperatures, methods of exhausting heat from kilns, types of kilns; all these have been explored, and in some instances apparently satisfactory answers have been evolved.

The Geist company, studying carefully the work of the Curing Committee, decided to build their new kilns for temperatures of 190 to 200 degrees F., and to provide for rapid exhaustion of steam. With these aims the new kilns were designed and built and will be in operation early this year.

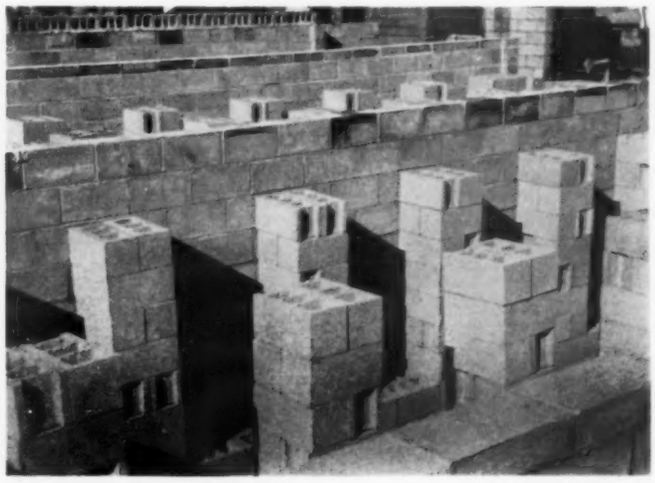
Kilns now in use at the Geist plant are of block construction with sand-gravel blocks in the older kilns and "Geistone" (Haydite) blocks in those constructed more recently. All of them are of single wall construction, using 8- by 8- by 16-inch blocks. These kilns are used with live steam under low (15-pound) boiler pressure, the kilns attaining a heat of about 150 degrees. To use the higher temperatures now recommended for curing, these kilns would be inefficient in operation and wasteful of heat. These older kilns will, however, continue in use, serving the present Besser Super-Vibrapac now in use at the plant. The new battery of kilns will serve the new Super-Vibrapac installed in December.

Walls of the new kilns are of double-wall construction above ground and the roofs are insulated with Haydite concrete.

Starting with poured concrete footings 24 inches wide and 10 inches deep, a double course of 8- by 8- by 16-inch blocks was used to grade level. The two courses are laid tight together making a 16-inch wall. Because of rising ground in the yard the new kiln floor will be about 30 inches below ground level at the outer wall. The top course at ground level is of solid-top blocks.

Above this is a double wall of two sizes and two kinds of blocks, with a 2-inch air space between. The inside wall is of 8- by 8- by 16-inch

Below (left): Pouring roof of kiln. Form on which man is standing is continuous beam over entrances. Below (right): Roof forms were placed on block piers raised to exact position with wedges.



plain pallets and hoisted onto steel sand-gravel blocks for their greater density and corresponding resistance to condensation and exuding moisture. The 2-inch air space is provided between this wall and the outer wall of 4- by 8- by 16-inch Geistone blocks, used for their insulation value. Weep holes are used in the first course above grade to afford passage for any moisture created in the air space. The solid-top blocks used in the last course below grade provide a continuous shelf on which was placed heavy waterproof paper to give moisture free passage through the weep holes and prevent it from penetrating the foundation walls.

Again on the top course, just below the roof, solid-top blocks are used. The roof is of two slabs of cast-in-place concrete. The lower slab is reinforced concrete and carries the load. On top of this was poured 4 inches of Haydite concrete for its insulating value. The roof slab floats on the solid tops of the wall blocks. Reinforcing used in the roof slab may be seen in one of the accompanying photographs.

This construction will be the kiln ceiling as well as the building roof.

Partitions between the kilns are of standard 8- by 8- by 16-inch sand-gravel blocks. Partition walls have

Detail of kiln wall below grade.

T ends with standard blocks laid crosswise. This serves as stiffening for the comparatively long unsupported wall, and allows sufficient space to mount the overhead doors used on the kilns.

There are eight kilns, each with a capacity of 20 racks. Each rack carries 72 standard blocks or equivalent so the kiln capacity will be 1,440 blocks each, and the total capacity 11,520 blocks. Kilns are 10 racks deep and 2 racks wide, and are designed to reduce the time lost in using long kilns.

The actual rack width is 5 feet 2 inches and the kiln width is 12 feet. The clearance allowed in width is therefore 20 inches. Racks are 3 feet 1 inch deep and the actual kiln length is 34 feet; clearance allowed lengthwise is therefore about 3 inches per rack. Head clearance is 7 feet which allows the Towmotor operator to enter the kiln without stooping, but still allows only about 15 inches clearance above the top tier of blocks on the rack.

The kilns will be served by steam lines bleeding directly into them. This method serves the double purpose of maintaining the high humidity as well as the heat necessary in curing. The curing method planned

Top course at below-grade section of wall. Solid-top blocks form continuous base for waterproof paper.

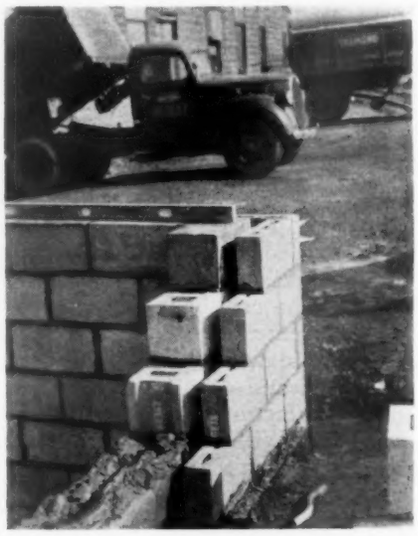
is as follows: The blocks will be allowed their initial set without heat. After about 3 hours the kilns will be closed and heat turned on. The blocks will be in steam for 17 to 20 hours.

There is a series of ducts built above the roof which will allow the exhaustion of high-humidity air in the kilns about two hours before they are to be emptied. Exhausting will be done one kiln at a time by a wing straight-line exhauster rotating at 7,250 r.p.m. This permits the rapid drying of the blocks and resultant lower moisture content than is possible with uncontrolled air drying.

The kilns are built with doors only at the inner end. In the physical layout of the Geist plant there is no apparent advantage in charging and discharging the kilns from different ends, and they continue their present method of single-end kilns.

Model LT-50 Towmotors are used in the plant for handling green and cured ware and in handling cubed blocks. Since Towmotors have been standard equipment for the past several years, kiln dimensions and clearances are computed with Towmotor dimensions in mind.

The Geist plant operates around the clock. Present daily production



Detail of wall above grade. Lower course of 4-in. blocks has weep holes in vertical mortar joints

runs to a high of well over 13,000 8- by 8- by 16-inch equivalents, with a year round average of slightly under 12,000 blocks per day. The new equipment will be operated on the same schedule giving a daily average production approaching 25,000 units which will make this plant among the highest production units in operation.

## Pacific Concrete

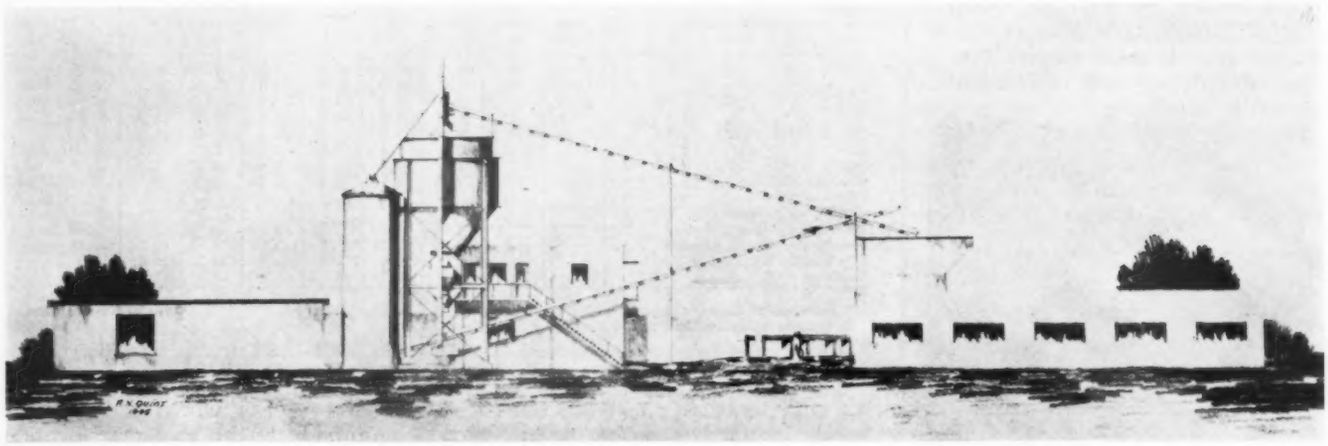
(*from page* 128)

racks which are transported to the yard for curing. Loaded and empty racks are carried by a Salsbury turret-type lift truck. This truck is economically operated by a 4-horsepower air-cooled gasoline engine, has a load-carrying capacity of 2,000 pounds and has a 4-inch lift.

Another planned "innovation"—for southern California, that is—will be the erection this fall of steam-curing tunnels. The climate makes open-air curing possible the year around, and that is the general practice in the industry. But the Pacific company, being already able to guarantee the quality of its concrete, wants to place its curing methods likewise on a scientific basis.

The office and plant are located at 11330 Tuxford Street in Roscoe. Leo Hirst is president, Charles McKean is plant superintendent, and Harry Foster the office manager.

# Albuquerque Firm To Dedicate Modern Ready-Mix Plant This Month



Elevation of Albuquerque Gravel Products Company's ready-mixed concrete plant now nearing completion.

another P and Q exclusive

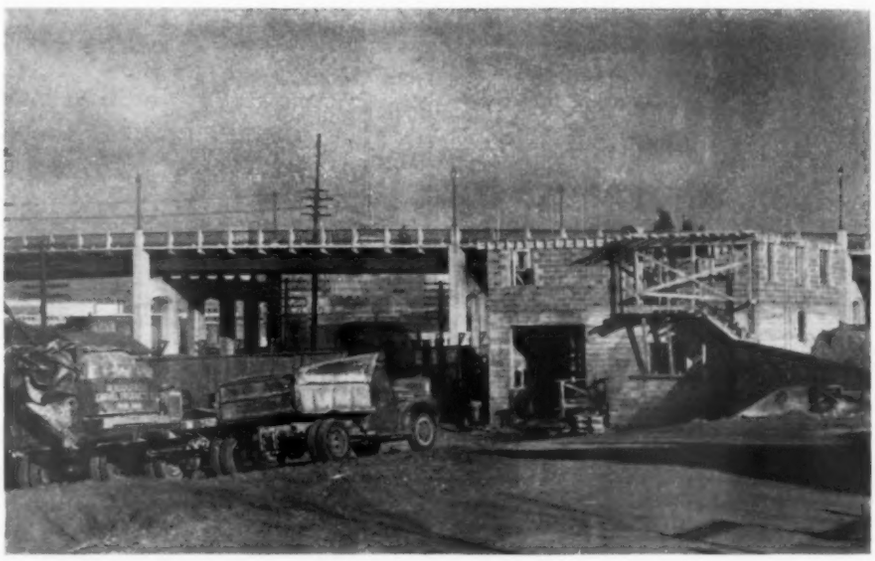
LOCATED in the heart of New Mexico on the Rio Grande in a rapidly growing city already having over 75,000 population, Albuquerque Gravel Products Company started operation nearly a year ago in the face of well established competition by opening a ready-mixed concrete business with a temporary set-up intended to "feel-out" the local market. Since then the steady increase in volume of sales has necessitated the planning of a new proportioning plant which will be one of the most compact and up-to-date plants in the country and the largest in New Mexico.

Since concrete is sold in Albuquerque on a guaranteed strength basis with 28-day strengths ranging from 1,200 to 3,000 pounds per square inch, this firm adopted the policy of producing concrete which was more than sand, gravel, cement and water —concrete which even at these low strengths would be superior in workability, durability and water-tightness.

The first step was to place emphasis on aggregate grading, and in order to have complete control of their concrete they decided to produce their own aggregate. The aggregates are natural sand and gravel, and contrary to local custom they are washing aggregates and using a split gradation on the coarse aggregate which enables them to blend the gravel at the batching plant in the proportions which result in the best over-all gradation. Albuquerque sand is naturally of a rather freak, almost gap, gradation with a heavy excess of material between the 30 and 50 sieves. However, by exercising care in processing it has been possible not only to meet A.S.T.M. specification on sand grading, but also to overcome to a large extent the poorly graded sand which nature left. Table I shows the results of a comparative sand test conducted by the University of New Mexico Testing Laboratory for Albuquerque Gravel Products Co. Sand "E" is a hand-made sample, but sand "F" is from their regular production run of October 22, 1945.

While care in aggregate grading and proportioning meant some improvement in workability, density and water-tightness, it had little effect on durability, and in this connection the matter of air-entrainment was studied. Some few tests were made using cements with air entraining agents interground at the mill, but strength results indicated that, since ready-mixed concrete was to be marketed on a guaranteed strength basis, a penalty would be imposed by using air-entraining cements of this type, inasmuch as additional cement would be required to maintain strengths equivalent to those obtained with untreated cement. Also, published data indicated that when using these agents it is somewhat difficult to maintain the percentage of entrained air within narrow limits without involving extremely close supervision and frequent changes in mixes.

In searching for a way to entrain air for increased durability without losing strength it was found that by using a commercial admixture, Poz-



View of plant under construction. Business district of Albuquerque is visible in background.

zolith, the percentage of entrained air remained close to the optimum over quite a range of sand gradations, and that long mixing times did not result in increases in air content. It was also found that Pozzolith resulted in sufficient reduction in water requirements for a given slump to permit enough reduction in the cement content to offset the cost of the admixture, and still maintain strengths equivalent to or greater than plain concrete. Accordingly it was decided to use Pozzolith in all guaranteed strength concrete, since by doing so it would be possible to

Left to right: Leon Frederich, Eugene Sundt and Ward Anderson.

produce concrete of a given strength which was superior to untreated concrete in cohesiveness, workability, bleeding, water-tightness and durability. Table II shows one of the comparative tests which were made by the University of New Mexico Testing Laboratory.

Although operating from a temporary plant, this firm has not lost sight of the importance of moisture control, and tests are made on the aggregates daily, or several times daily in

TABLE I—COMPARISON OF ALBUQUERQUE CONCRETE SANDS
UNIVERSITY OF NEW MEXICO MATERIALS TESTING LABORATORY

| | CUMULATIVE PERCENTAGE PASSING | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SIEVE SIZE | ASTM Maximum Limits | "Ideal" Grading | "A" | "B" | "C" | "D" | Average Albuquerque Sand | "E" | "F" | Maximum Limits for "Ideal" Grading |
| 4 | 95-100 | 96 | 99.0 | 90.0b | 96.0 | 94.0b | 94.75b | 94.5b | 95.75 | 95-100 |
| 8 | a(76-90) | 82 | 91.0 | 81.0 | 82.5 | 81.0 | 83.88 | 77.5 | 74.75 | 76-85 |
| 16 | 45-80 | 61 | 80.0 | 73.0 | 73.0 | 71.0 | 74.25 | 62.0 | 59.00 | 55-65 |
| 30 | a(22-60) | 39 | 61.0 | 55.5 | 59.0 | 52.0 | 56.88 | 48.0 | 43.50 | 35-45 |
| 50 | 10-30 | 18 | 21.0 | 17.0 | 34.5b | 16.5 | 22.25 | 21.0 | 21.50 | 12-22 |
| 100 | 2-10 | 4 | 5.0 | 3.5 | 12.5b | 3.5 | 6.13 | 6.5 | 8.00 | 2-8 |
| 200 | 0-5 | 1 | 1.0 | 1.0 | 3.0 | 1.0 | 1.50 | 1.0 | 2.25 | 0-2 |
| Fineness Modulus | 2.3-3.5 | 3.00 | 2.43 | 2.80 | 2.63 | 2.82 | 2.62 | 2.91 | 2.975 | 2.75-3.25 |
| Absorption per cent | | | 1 | | | | | | | |
| Bulk Specific Gravity | | | 2.61 | 2.60 | 2.61 | 2.60 | 2.605 | 2.60 | 2.60 | |
| Absolute Volume lb. per cu. ft. | | | 162.86 | 162.24 | 162.86 | 162.24 | 162.55 | 162.24 | 162.24 | |
| Dry Rodded Wt. lb. per cu. ft. | | | 103.0 | 106.0 | 110.5 | 104.5 | 106.0 | 111.5 | 111.5 | |
| Voids per cent | | | 36.7 | 34.7 | 32.1 | 35.6 | 34.8 | 31.3 | 31.3 | |

a Interpolated from grading curve. No values listed in A.S.T.M. Standards.
b. Outside maximum limits set by A.S.T.M. Specification C-33-44.

variable weather, and corrections are made in batch weights in order to maintain uniform water-cement ratio, strength and slump. Bagged cement is being used, and where fractions of a sack are used the fraction is weighed. No water is carried in the tanks on the mixers, since the proper amount is placed directly in the drum at the plant. This procedure together with care in making moisture corrections has resulted in many favorable comments on the uniformity of the concrete.

The new plant under construction is located within a few blocks of the heart of the business district, and 2¼ miles from the company's gravel pit. The offices are located above the shop, and it is only a few steps from the office to the batch plant operator's platform, which is on a slightly higher elevation. Floor and roof construction makes use of the precast concrete joists which will also be manufactured at the new location. Aggregate deliveries will be by dump truck to open storage bunkers with a tunnel conveyor feeding 240 feet of inclined belt conveyor. Due to space limitations the inclined belt conveyor is in two sections which reverses the travel. The proportioning plant will be a Blaw Knox six-compartment circular bin with two 250-barrel cement compartments and four aggregate compartments having a combined capacity of over 200 tons. Provision is being made to add an auxiliary cement silo at a later date. Weighing of cement into the 4½-cubic-yard batch hopper will be fully automatic. Each scale beam on the aggregate batcher will be equipped with a moisture correction scale calibrated in terms of per cent. moisture, and when set for the proper percentage the scale will

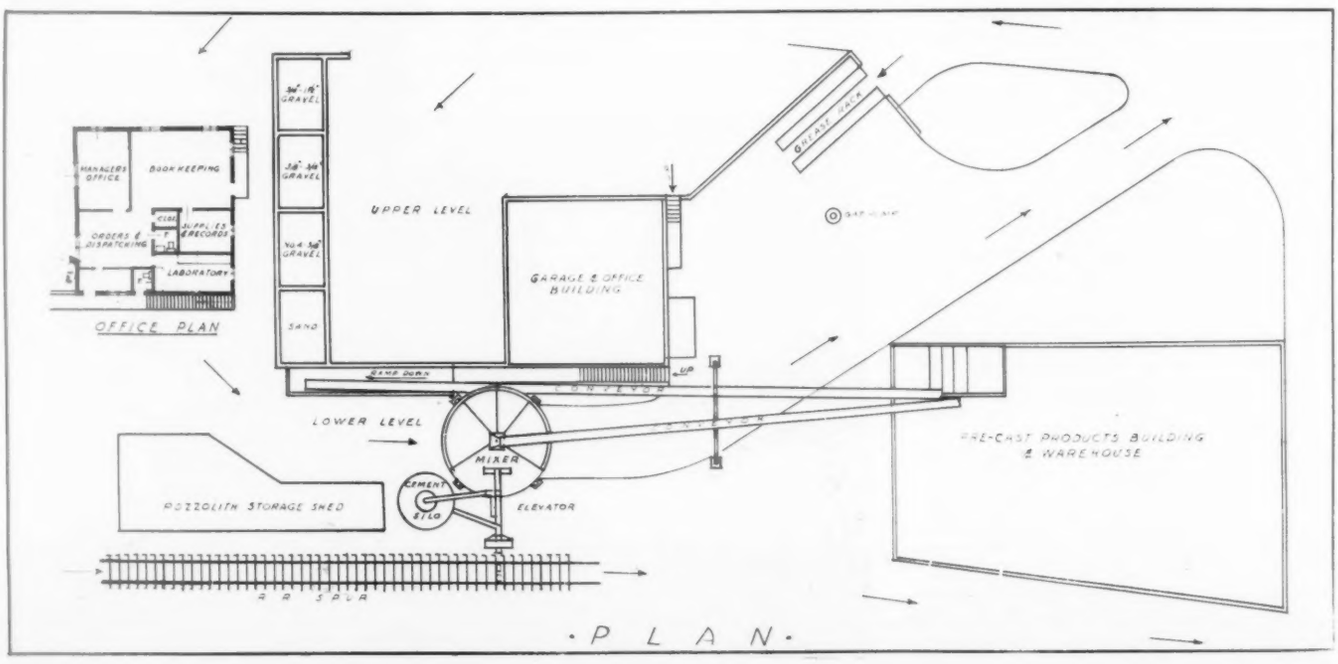


TABLE II—COMPARATIVE CONCRETE TESTS
PLAIN VS. POZZOLITH FOR BOTH ¾-INCH AND 1½-INCH GRAVEL

| MIX PROPORTIONS: | HAND-MIXED TRIAL BATCH | | MACHINE MIXED BATCHES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Plain ¾ in. | | Plain ¾ in. | | Pozzolith ¾ in. | | Plain 1½ in. | | Pozzolith 1½ in | |
| | Weight | Absolute Volume | Weight | Absolute Volume | Weight | Absolute Volume | Weight | Absolute Volume | Weight | Absolute Volume |
| Water | 75 | 1.202 | 75 | 1.202 | 75 | 1.202 | 75 | 1.202 | 75 | 1.202 |
| Cement (Specific Gravity 3.15—1650 Grind) | 94 | .478 | 94 | .478 | 94 | .478 | 94 | .478 | 94 | .478 |
| Sand (Specific Gravity 2.60—Fineness Nodulus 2.95) | 342 | 2.108 | 342 | 2.108 | 392 | 2.416 | 360 | 2.219 | 408 | 2.515 |
| No. 4—¾ in. (Specific Gravity 2.65—Fineness Nodulus 6.71) | 358 | 2.165 | 358 | 2.165 | 450 | 2.721 | 240 | 1.451 | 301 | 1.820 |
| ¾ in.-1½ in. (Specific Gravity 2.65 Fineness Nodulus 8.03) | | | | | | | 240 | 1.451 | 301 | 1.820 |
| Total Batch Weights and Absolute Volumes | 869 | 5.953 | 869 | 5.953 | 1,011 | 6.817 | 1,009 | 6.801 | 1,179 | 7.835 |
| Theoretical Weight lb. per cu. ft. | 145.98 | | 145.98 | | 148.31 | | 148.36 | | 150.48 | |
| Measured Weight lb. per cu. ft. | 146.0 | | 144.8 | | 141.6 | | 148.0 | | 146.3 | |
| Air per cent (ASTM C-138) | 0.0 | | 0.8 | | 4.5 | | 0.2 | | 2.8 | |
| Slump inches | 3¼ | | 3⅞ | | 5½ | | 3½ | | 3 | |
| Per cent. Sand to Total Aggregate by Absolute Volume | 49.3 | | 49.3 | | 47.0 | | 43.3 | | 40.9 | |
| Combined Fineness Nodulus of Aggregates | 4.17 | | 4.17 | | 4.92 | | 5.44 | | 5.55 | |
| Theoretical Cement Content—Sacks per Cu. Yd. | 4.536 | | 4.536 | | 3.961 | | 3.970 | | 3.446 | |
| Actual Cement Content—Sacks per Cu. Yd. | 4.536 | | 4.499 | | 3.782 | | 3.960 | | 3.350 | |
| 7-Day Compressive Strength | | | 1,973 (3) | | 1,967 (3) | | 1,930 (3) | | 2,163 (3) | |
| 28-Day Compressive Strength | 3,040 (1) | | 2,855 (2) | | 2,870 (3) | | 2,993 (3) | | 3,033 (3) | |
| Water Cement lb. per Actual Cu. Yd. | 340.2 | | 337.4 | | 283.7 | | 297.0 | | 251.3 | |
| Decreased Water in Pozzolith Concrete Per cent. | | | | | 15.9 | | | | 15.4 | |

NOTE: Same cement used in all batches. In Pozzolith batches type 2-S-R was added in the proportions of 0.9 pound Pozzolith per 94 lbs. cement, which is in accordance with the manufacturers' recommendations.
Numbers in parenthesis indicate number of specimens which have been averaged. Tests conducted by the University of New Mexico Testing Laboratory for Albuquerque Gravel Products Company.

automatically make the correct allowance. The Pozzolith storage shed will contain two sets of tanks—one for regular solution and the other for high early strength solution. To eliminate the necessity of a valving arrangement to change solutions, two separate and entirely automatic dispenser units will be used. Water is batched by weight.

For winter concrete the new plant will be able to meet specifications requiring that warm concrete be delivered to the job regardless of the prevailing temperature. In one corner of the basement shop will be a 1500 gallon hotwater storage tank which will be heated by an automatic gas-fired steam boiler. Hot water will be introduced to the water weigh-batcher through a calibrated mixing valve so that accurate control of the water temperature will be possible and the danger of flash set eliminated. The same boiler will also provide steam for heating aggregate in the elevated bin, and aggregates in the ground storage bunkers will be maintained above freezing by a system of tubes into which gas flames will be directed.

The plant will have a conservative batching capacity of 80 cubic yards per hour, but by increasing the capacity of the belt conveyor the plant capacity can later be increased to a peak capacity of over 250 cubic yards per hour. Present hauling equipment consists of eight 4½-cubic-yard units. Two 2-cubic-yard units will soon be added to the fleet in order to accommodate small orders or "tail-end" loads for finishing a pour. This will permit keeping the large units operating with full loads the greater part of the time.

When the new plant is in operation, it is planned to place the present 60-ton, 3-compartment batch plant under the conveyor at the point where it doubles back and use this in connection with a stationary mixer for the pre-cast products department.

At the gravel pit a new stationary crushing, screening and washing plant is being constructed to replace the temporary plant which now consists of a Cedar Rapids Master Tandum and a Pioneer 412-V washing plant, with final gravel sizing being done on a Diamond Bin screen.

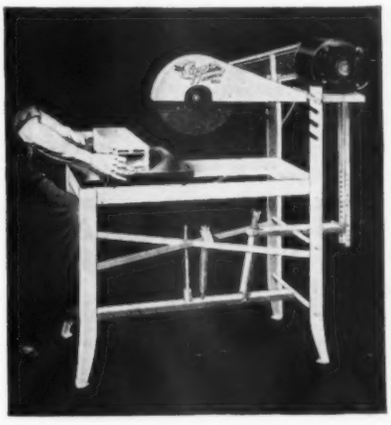
## Indiana Products Firm Building Block Plant

The Masonry Products Company, a new industry at Columbia City, Indiana, has begun construction of a plant for the manufacture of building blocks of several designs and materials. The owners and operators are L. A. Mason, E. E. Heupel and R. J. Grant.

Light-weight units will be made of aggregates including cinders, burned clay and steel mill slag. The continuous-line process will be employed. The firm also plans to engage in the ready-mix concrete business.

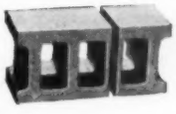

FASTER CUTTING
...with
Clipper Masonry Saws

Your Special Size and Shape Brick or Concrete Block can now be "Tailor Made" at a moment's notice!



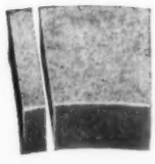
The new Clipper Multiple Cutting Principle makes possible faster cutting of every masonry material regardless of hardness.

Here are a few typical examples of the speed and accuracy with which concrete products and fire brick can be cut.



This concrete block, converted into a special size, was cut completely in two in 19 seconds.

One of the many intricate cuts performed on first quality clay brick for heat treating furnaces —made in 8 sec.



Rotary Kiln Blocks, cut to size for "key" bricks in rotary kilns, require only 10 sec. for completion of cut.

Basic refractories for steel furnaces or cement kilns must be accurately installed. This magnisite brick was cut in 12 seconds!

*Clipper Saws are available for trial. Write for Descriptive Catalogs.*

THE Clipper MANUFACTURING COMPANY
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## N. R. M. C.

(*from page* 131)

Mr. Ahearn said, in speaking on the subject of call-in pay, that employers must protect the dignity of the worker. Reporting for work and being sent back home without compensation damages the prestige of the worker with his own family and lowers his morale.

Temporary job assignments—say those of not over two weeks' duration—should carry the same pay rate as the job classification in which the transferred worker is regularly employed, even though the temporary job carries a lower rate. The payroll week or five days is sometimes used as the basis for determining what constitutes a temporary job assignment. Opportunities for upgrading are sometimes limited by union agreement, Mr. Ahearn added.

**Testing Procedure** *Importance of Correct Procedures in Testing Concrete* was discussed by John R. Dwyer, Cement Reference Laboratory, National Bureau of Standards. This organization has until recently only inspected cement-testing laboratories but now also covers concrete testing. It is a cooperative effort of the A.S.T.M. and the Bureau of Standards and operates with funds from these bodies and the Bureau of Public Roads. Its aim is to promote improved testing but it has no police powers and goes only where invited.

**Concrete Merchandising** Next on the program was an open forum on the merchandising of ready mixed concrete. R. C. Collins, Warner Co., first reported on the activities of the Committee on Merchandising of which he is chairman. Mr. Collins said that when this committee was formed 9 years ago few producers used a contract form; now most producers use them.

Mr. Collins went on to say that the volume of business the industry will obtain will be governed largely by the ability of producers to supply concrete and the availability of labor to build. Steps must be taken, he said, to get the most out of present equipment and reduce the lost time of trucks on the job.

H. F. Thomson said that during the war customers did not expect much service but now that the war is over they are expecting peacetime service in spite of the fact that some conditions are worse than before. He said that the use of hoppers will reduce lost time at some jobs but cautioned against promiscuously supplying them free of charge as contractors will abuse privileges if given too much. His company rents out hoppers.

C. P. Maloney, Maloney Concrete, Inc., Washington, said that the use of numerous batching plants distributed over their sales area has gotten maximum capacity out of their truck mixers. He mentioned another producer who charges $15 per hour for operating his plant on Sunday and who also makes a high charge for less-than-capacity loads.

J. M. McCracken, American Builders Supply Co., Louisville, said that his company furnished hoppers free for years and contractors did not take care of them. Now a charge is made with much better results.

Mr. Collins said that his company finds it profitable to employ a service man to visit jobs and keep trucks speeded up. Where trucks are being delayed regularly some are taken off. If delays on the job cost the contractor money, he said, steps will be taken to speed up unloading.

W. R. Sostheim, New Albany Ready Mixed Concrete, Inc., New Albany, Ind., created considerable interest with his description of a method which has effected a 98 per cent. reduction in the time lost at the job by his company's trucks.

M. E. Sundt, Albuquerque Gravel Products Co., Albuquerque, N. M., described a system of time stamping delivery tickets. The job superintendent is also required to certify if water is added at the job; this is especially important if a strength guarantee is given.

Harry C. Shields, Marquette Cement Mfg. Co., told of one producer who uses a delivery ticket on which any water additions are entered and signed for. From 10 to 16 gallons of water had been added to 3-cu. yd. loads in many cases, reducing 3500-lb. concrete to 1800-lb. No further trouble has been experienced.

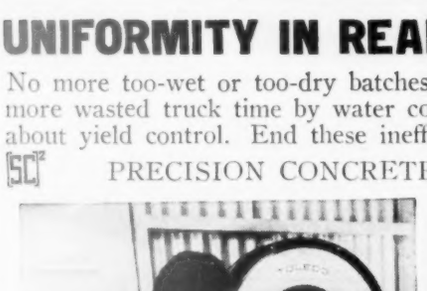
**Election of Officers** First on the order of business at the Friday afternoon session of the National Ready Mixed Concrete Association was the election of officers for the coming year. The nominating committee submitted the names of the following men who were unanimously elected:

President, Charles W. Shirey, C. W. Shirey Co., Waterloo, Iowa.


## UNIFORMITY IN READY-MIXED CONCRETE

No more too-wet or too-dry batches. No more erratic cylinder tests. No more wasted truck time by water corrections on the job. No more worry about yield control. End these inefficiencies by installing—

[SC]² PRECISION CONCRETE CONTROL in your plant.



The [SC]² Moisture Meter. The only unit capable of determining moisture content in less than 1 minute.

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[SC]² **CONTROL** produces remarkable batch-to-batch and day-to-day uniformity—in quality, slump and yield—and, by doing a better batching job, has always increased profits.

[SC]² **CONTROL** has pleased and satisfied every engineer, contractor and ready-mix-plant owner who has used it. It can do as much for you. You cannot afford not to investigate this. Write now for our new bulletin on batching plant performance and get full information on what [SC]² **CONTROL** can accomplish in your plant.

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**724 Salem Avenue** **Elizabeth 3, N. J.**

Vice-President, F. P. Spratlen, Jr., Ready Mixed Concrete Co., Denver.

Treasurer, C. Dally Gray, Ready Mixed Concrete Corp., Indianapolis.

Board of Directors: Wm. Moore, J. P. O'Connell Co., Boston, Mass., N. J. Frederick, Koenig Coal & Supply Co., Detroit, John Murphy, George Eady, Consumers Supply Co., Louisville, Ky., Alexander Foster, Jr., Warner Co., Philadelphia. The retiring president left office with the distinction of having been president of both the National Sand and Gravel Association and the National Ready Mixed Concrete Association.

**Proportioning Concrete** Mr. Spratlen immediately assumed his duties as president by presiding over the remaining portion of the session. The first speaker to be introduced was A. T. Goldbeck, Engineering Director of the National Crushed Stone Association who discussed *The Proportioning of Concrete*. Mr. Goldbeck illustrated his mathematical calculations for proportioning concrete by the use of lantern slides.

**Air Entrainment** The next part of the session was devoted to an open forum on concrete containing entrained air with Joe Barbee, Ohio State Highway Dept., and W. F. Kellermann, Public Roads Administration, as principal speakers.

Mr. Barbee spoke of his experience with air-entrained concrete on highways and that the observed results were so satisfactory that future concrete construction will be with air-entrained or Vinsol resin treated concrete. His experience has been that the reduced strength of air-entrained concrete is not a serious problem and the advantage of reduced scaling has more than offset it.

Mr. Kellermann then took the floor and explained that air-entrained concrete is more workable and more resistant to weather or climatic changes but his bureau desires to learn more about the characteristics and possibilities of air-entrained concrete.

**Laboratory Studies** Following the open forum brief papers were presented on the various phases of ready-mixed-concrete production. D. L. Bloem, Associate Research Engineer, National Ready Mixed Concrete Association, presented a discussion on the association's laboratory studies. These studies have been concentrated on the effect of entrained air on the compression strength of concrete. In lean mixes the entrainment of air had little effect on the strength, and in rich mixes a very small percentage of air caused noticeable strength reduction.

**Haulage** D. C. Hay, of Kuert Concrete, Inc., South Bend, Ind., related his experience with haulage in non-agitating equipment. For the past 20 years Mr. Hay's company has delivered ready-mixed concrete in non-agitating equipment and is satisfied with the results obtained. Average hauls run 7 to 8 miles though a 28-mile haul was successfully made, but not recommended by Mr. Hay as a suitable distance for average hauls. In summing up, Mr. Hay advised that in preparing to haul with non-agitating equipment, location of hauls, delays, and any obstacle to speed should be given serious thought.

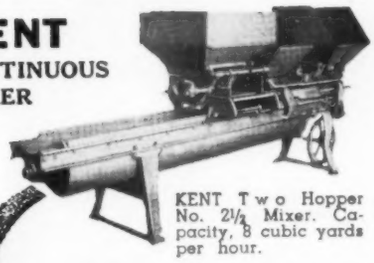
**Time of Mixing** Effect of time on mixing was discussed by R. P. Mumford, Beckley & Myers Co., Springfield, Ohio. From experiments performed, Mr. Mumford has prepared figures which indicate that the greater the percentage of air at the beginning of mixing operations, the greater the reduction of air by prolonged mixing. Concrete containing a small percentage of air to begin with will not have a great amount of reduction by longer mixing. Mr. Mumford acknowledged that his paper did not provide conclusive facts on the effects of mixing time but that further experiments will be made.

**Central Mixing** Alexander Foster Jr., of the Warner Co., addressed the session on central mixing operations as experienced by his company. In jobs where difficulties arise, a study of the mixture is made and then changes are made to rectify the existing troubles. Mr. Foster presented specific applications of entrained concrete, the troubles developed and remedies including mix proportions.

**Transit Mixing** Julius Warner, Richter Concrete Corp., Cincinnati, in his discussion on transit mixing operations, cited his experiences with air-entrainment and some of the difficulties. The concluding example cited by Mr. Warner was a case of where two different cements were used to pave a driveway. One cement contained an admixture, the other did not. After a time, it developed that the concrete with the admixture had excessive scaling while the other remained in good shape.


**"IT JUST KEEPS ROLLIN' ALONG"**

**KENT**
**CONTINUOUS MIXER**



KENT Two Hopper No. 2½ Mixer. Capacity, 8 cubic yards per hour.

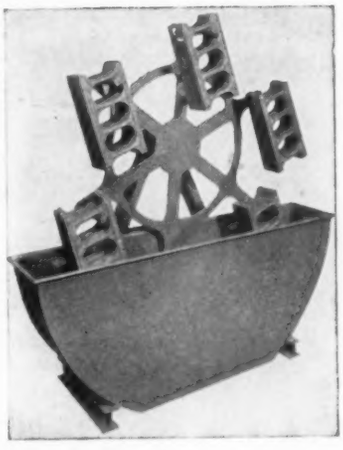
**A STEADY STREAM OF PERFECTLY PROCESSED CONCRETE** — insured by this KENT machine—is just what your block plant needs to establish output and profit records.

KENT accuracy in measuring cement and aggregates — KENT thoroughness of mixing — KENT simplicity and durability — KENT operating economy—enable concrete block producers everywhere to handle current orders and "get set" for bigger post-war business.

For Clean Pallets . . .

*dip 'em in the*

**KENT DUNKER**



Your pallets will mold better blocks and give longer service if they are regularly cleaned and oiled in a KENT Dunker. Hang 'em on the pins—as you take them off, the rest are rotated through the tank. Truck crank case oil works perfectly.

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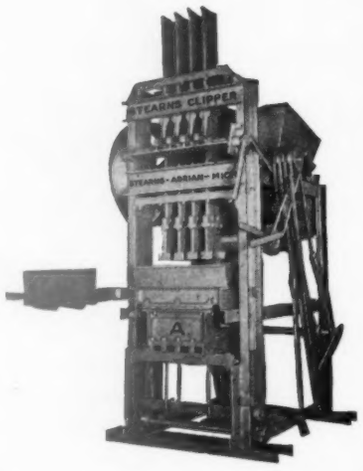
Cuyahoga Falls, Ohio

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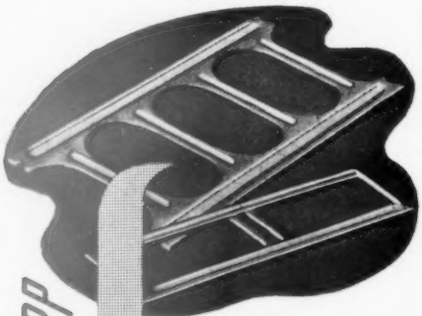

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# TRADE NOTES

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M. A. Goodwin

Maxwell A. Goodwin, lately a major on the staff of General Somerwell, has returned to his prewar position as manager of the Chicago office of Clark Tructractor, a division of Clark Equipment Company.

Called to Washington in July, 1942, to supervise distribution of industrial power trucks for the Army and Army Air Forces, Mr. Goodwin was commissioned a captain in October, 1942, and was made a Major in November, 1943. He served as chief of the Materials Handling Equipment Section of the Storage Division, Headquarters, Army Service Forces, and directed the allocation of materials-handling equipment for the Army, Army Air Forces and, to a large extent, for Lend-Lease and the Navy. Equipment under his supervision included industrial towing tractors, fork lift trucks, straddle trucks, crawler, truck-mounted and railway cranes, locomotives, crawler tractors, motor vehicles and tug boats.

**What do you want to know about the ready-mixed concrete industry or about concrete blocks, pipes, etc.? The Concrete Industries Yearbook can probably tell you.**

## TRADE LITERATURE

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90 pieces 3" x 4" x 5/16" Angle Iron, 40 ft. long.

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**375 Mather Street — Hamden, Connecticut**

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About 5000 used or new steel cored pallets size 8x8x16 to fit No. 7 Stearns Jolterete Block Machine. Write

**KOST BROTHERS**
**Moorhead, Minnesota**

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Equipment for 5000 block plant. Besser and Trackson preferred.

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**538 So. Clark St. — Chicago 5, Ill.**

**WANTED**

Block plant, about 5000 block. Give particulars.

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**SITUATION WANTED**

As manager-superintendent or research work in concrete products line. 15 years' experience in research and use of lightweight concrete, both air-expanded concrete and lightweight aggregates. Experienced machinist and arc welder. 37 years of age, college education.

**Box No. 210, c/o Pit and Quarry Publications**
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**WANTED**

10 S Jaeger Tilt Type Mixers.

**AMERICAN WILBERT VAULT CORPORATION**
**Forest Park — Illinois**

**FOR SALE**

1½ yd. Blaw Knox Truck Mixer mounted on Chev. 1940 truck, A-1 shape, priced for quick sale.

**GRAVES BROS. CONST. CO.**
**Melvin, Iowa**

**FOR SALE**

1 Autocar Truck with Rex Mixer.
1 Mack Truck with Jaeger Mixer.
Condition Good
Available Immediately.

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**375 Mather St. — Hamden, Conn.**

**WANTED**

Foreman for work in New Haven County, Conn. on concrete walks and driveways, asphalt drives and roads; also able to estimate jobs.

Please state all particulars as to wage, experience, etc.

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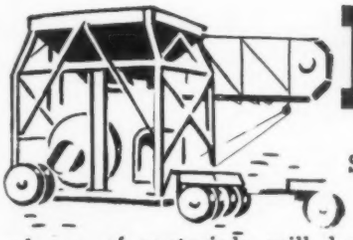
**WANTED**

Anchor or other standard make machine for making concrete tile, 5 x 8 x 12 size.

**STEELE BROTHERS**
**Dorchester, Nebraska**



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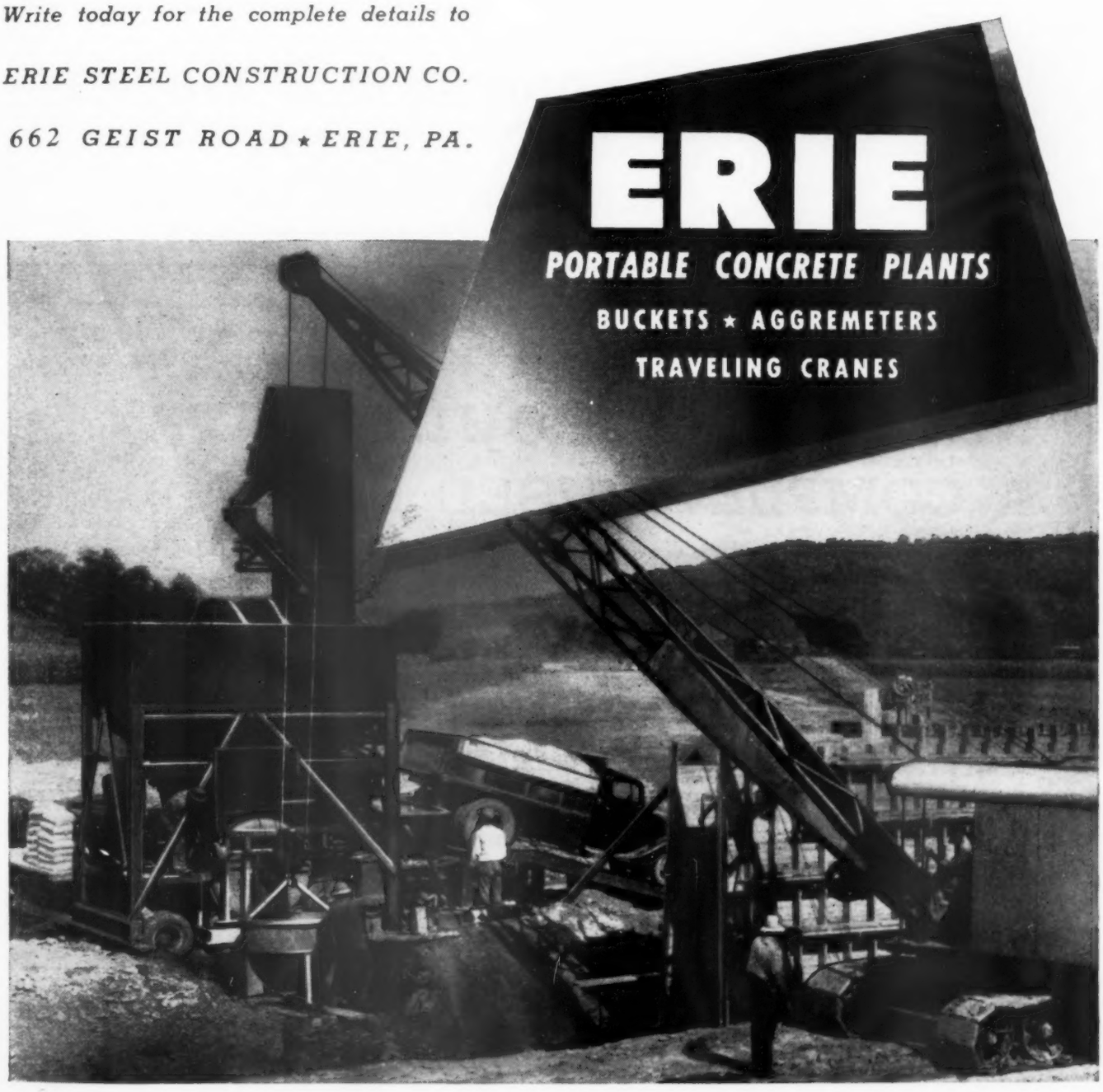
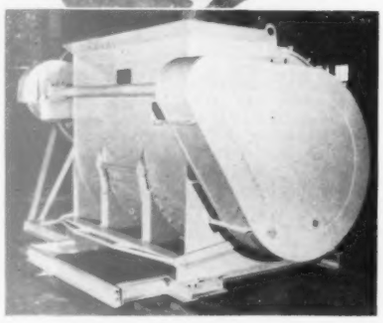
*Write today for the complete details to*

*ERIE STEEL CONSTRUCTION CO.*

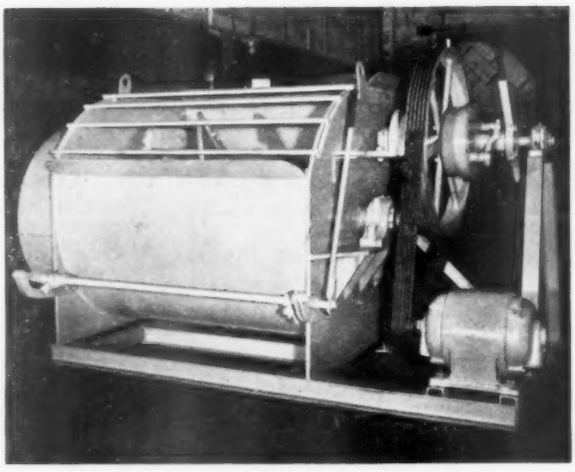
*662 GEIST ROAD ★ ERIE, PA.*



# Answers YOUR Need!



This powerful, heavy-duty CONCRETE MIXER is equipped with two spiral blades, hardened liners and precision roller bearings . . . capable of meeting every production requirement in the efficient operation of your Block Plant.



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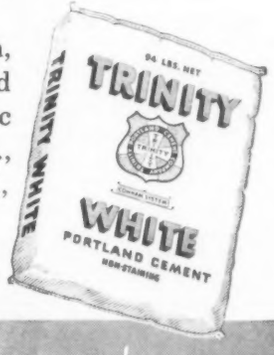


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***PLAIN OR WATERPROOFED***

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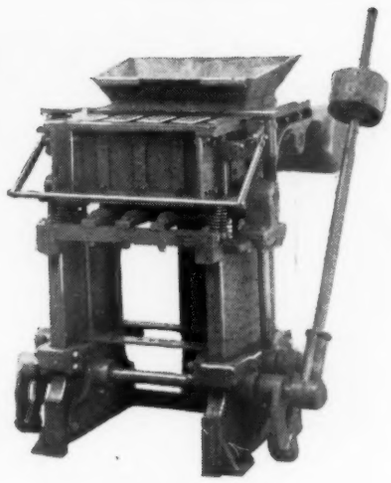
*for only* **$995.00** F.O.B. FACTORY



**So economical is this machine in operation . . . of such uniform high quality is the block made on it, that manufacturer after manufacturer who started out with one unit is adding two, three and four more.**

**The Little Giant is a low-priced vibrating machine that moulds perfectly cut blocks of maximum strength and density. Vibration is applied to the mould box while cores remain stationary, thus producing a superior block with square true corners and a smooth face.**

**This is the block machine you want to investigate. Write today for descriptive literature.**

**Simply designed and durably built, the Little Giant makes 100 8"x 8"x 16" units per hour. Interchangeable cores and partition plates permit manufacture of 6 standard types of block.**

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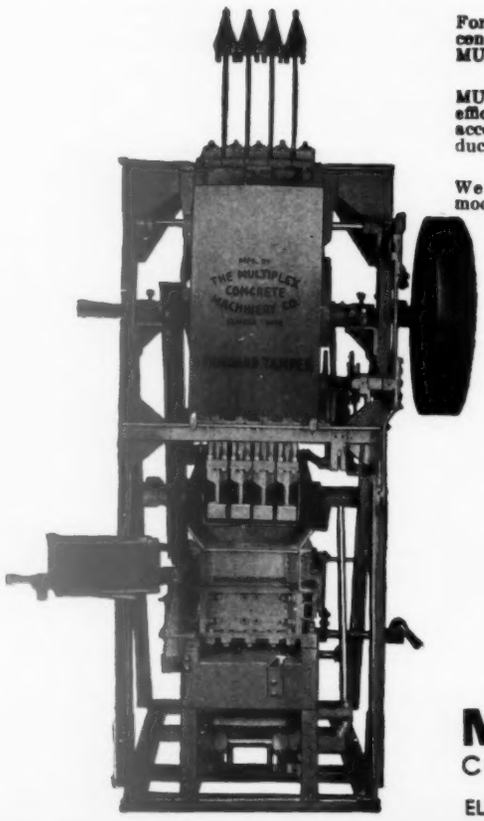


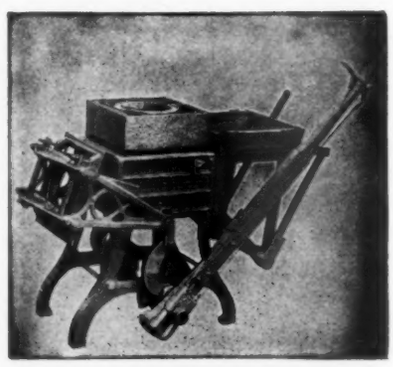
For a Quick "Take-Off" and sustained pace in concrete block output, reserve one of the MULTIPLEX *high-speed* machines.

MULTIPLEX offers a wide variety of super-efficient mixing equipment, with all types of accessories necessary for economical mass production.

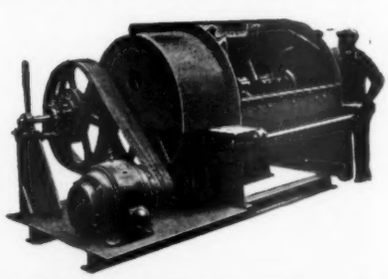
We can recommend MULTIPLEX units for modernizing *your* plant and enlarging its capacity.

Our universal type MULTIPLEX Standard Tamper for making plain and stripper, or face blocks, on one base. Easily convertible as business expands. Supplied with 4-bar or 8-bar tamper, either power or hand operated.

Write for Booklet describing the MULTIPLEX complete line of concrete mixing equipment, including Double and Single Hand Press Strippers, Power Press Strippers, and Super-Tampers.



The MULTIPLEX Flue Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings.



MULTIPLEX Multi-Mixer with reverse screw-type action insures fast and thorough mixing of every batch. Side, end or bottom discharge.

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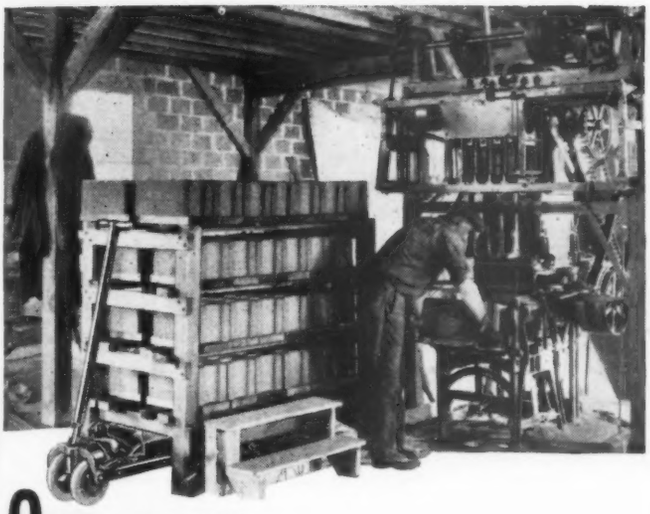
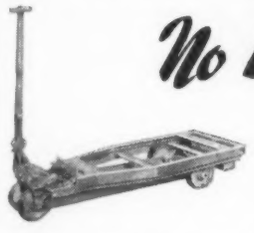


# ONE MAN HANDLES 48 BLOCKS . . .

## *No Breakage!*



Yes, *one man* with a Barrett Lift-truck handles 48 of these standard concrete blocks 8″ x 8″ x 16″ (or 32 of the 8″ x 12″ x 16″ size). Holding the Lift-truck handle in any position, he raises the load with a single downward sweep. For lowering, he steps on the release pedal . . . and the load settles gently to the floor under control of a hydraulic check.

**Barrett Lift-trucks Cushion the Ride**

Blocks are moved from machine to curing room and through storage without breakage, protected from jolts and jars by super spring frame and rubber tires. Other features include Hyatt bearings . . . Zerk lubrication . . . and four-wheel construction. The initial cost is low—maintenance, almost nil. Ask a Barrett engineer for a demonstration of Lift-truck performance, or write for illustrated circular.

*and for electric drive . . .*

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**Cuts handling time and effort to an absolute minimum. Hand lift—electric drive. Loads are raised with a few short strokes of truck handle. Forward and reverse motion of truck is electric, controlled by push buttons. Automatic brake, dual motors, rear wheel drive. PowerOx provides real economy without a large investment. Write for details today!**

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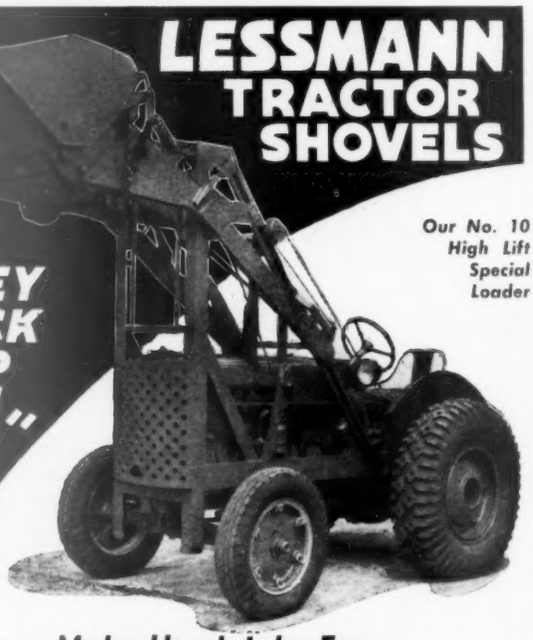

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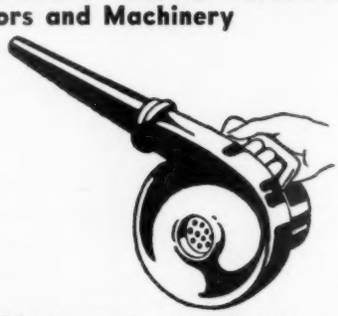

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IT'S THE
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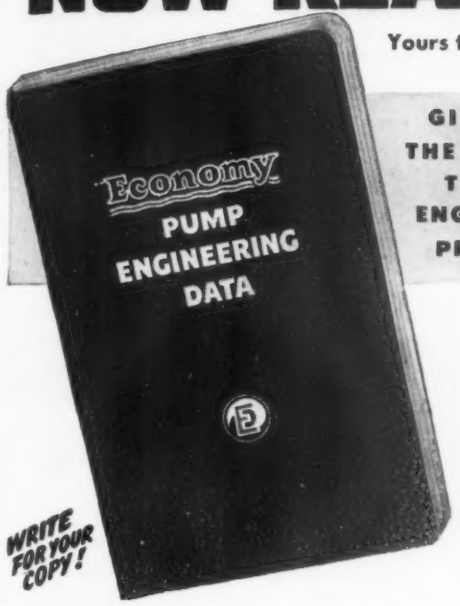


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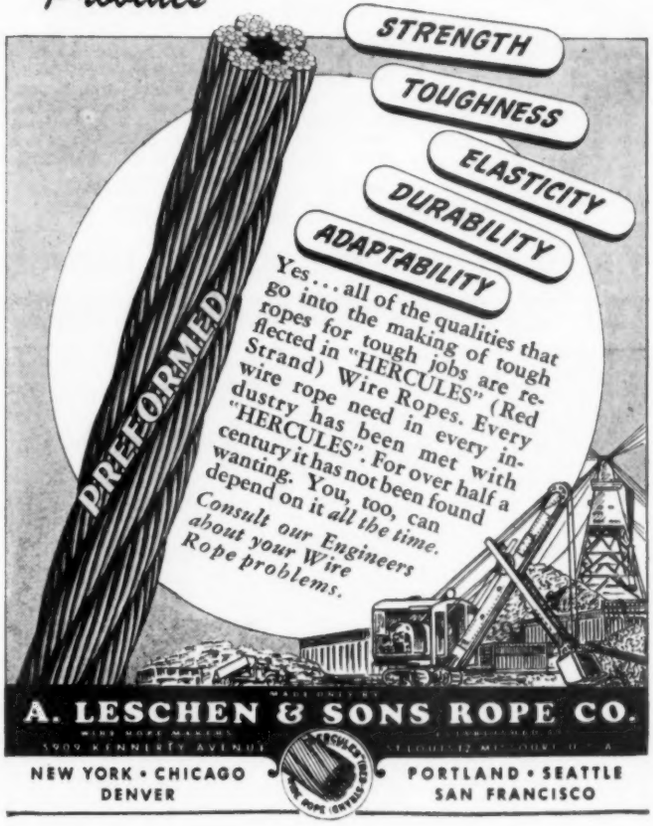
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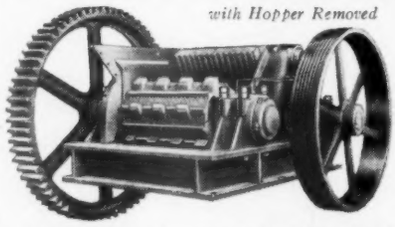

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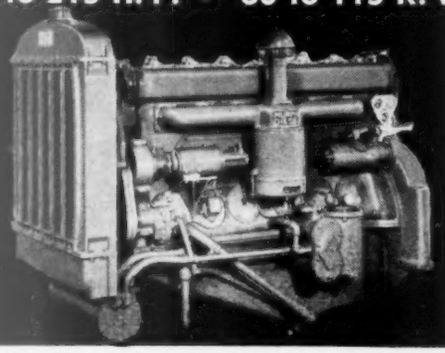

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Two-Deck Model 42" x 96" Motor & V-rope Dr

**UNIVERSAL VIBRATING SCREEN CO.**
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## Every "DAY" brings more Profits

The "DAY" Swing Hammer Roller Bearing Pulverizer gives exceptionally wide crushing range combined with low operating cost. Efficient producer of road stone and agstone.
Manufactured by

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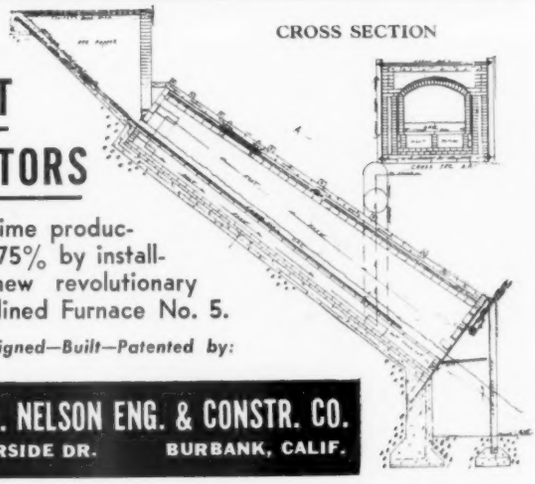
## LIME PLANT OPERATORS

CROSS SECTION



Cut your lime production costs 75% by installing the new revolutionary Nelson Inclined Furnace No. 5.

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ROUND
SQUARE
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HEXAGON
**PERFORATED PLATE**
of every description
for maximum productiveness from your vibrating screens.
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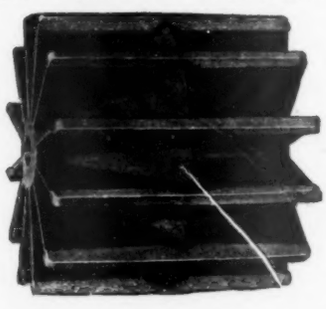
that the **Belt-Saver Pulley** saves money and rubber and prevents accidents on their belt conveyors and bucket elevators.



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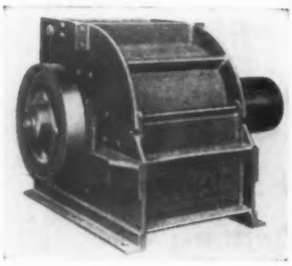
136 Sherman Street Muncy, Pa.

## This EAGLE Unit gives Crushing Costs "BOTH BARRELS!"

**. . . as a CRUSHER**

. . . the EAGLE Pulverizer and Impact Breaker provides large-scale, high-economy output of accurately sized material for highway and general use.



**. . . as a PULVERIZER**

. . . the same machine is easily adjustable for reducing rock waste and dust to valuable fertilizer. This is a husky, durable unit, with one-piece electric welded steel plate frame.

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IMPACT BREAKERS
PULVERIZERS
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Territory open for responsible distributors

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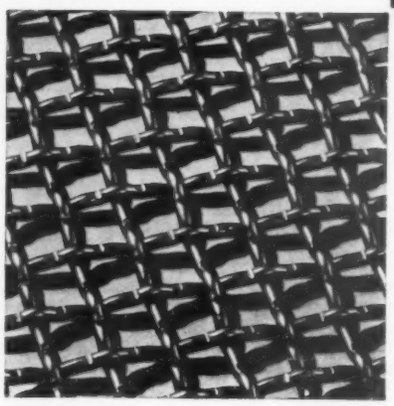

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Wire screens powerfully and accurately built to resist the slam bang service of Vibrators are available in all openings and grades. Rapid wear, is effectively reduced by the use of stalwart steels.

**Stop losses! Write today.**

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**HYDRAULIC HOISTS –**
**STEEL DUMP BODIES**
***All Sizes — Any Capacity***

**THE DAYBROOK HYDRAULIC CORP.**

**BOWLING GREEN, OHIO**

**Rx** *Prescribed for Production Problems*

**COLUMBUS** *Better* **BELT CONVEYORS**

. . . help to keep supply lines open and vital materials moving *faster.*

COLUMBUS modern elevating and conveying machinery is available for greater speed and economy in every phase of material handling.

COLUMBUS HAS IT . . . practically everything from a bucket to a complete plant!

Write for Bulletin No. 155.

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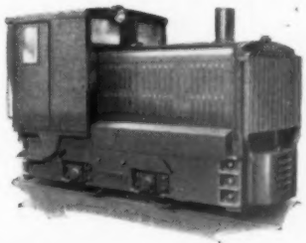

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• FROM 2½ TO 70 TONS •

**PLYMOUTH LOCOMOTIVE WORKS**
Division of The Fate-Root-Heath Co. • PLYMOUTH, OHIO, U. S. A.

## WANTED
## PLANT SUPERINTENDENT

Familiar with pipe, block or any special concrete product. Must have at least high school education, be mechanically inclined and have pleasing personality. Age limit 48. Postwar opportunity with large concern branching out into full line of products in various sections of the United States and operating on an incentive profit sharing plan. Past record must stand rigid inspection. Include photograph in reply. Address Box 709, care of

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**Diamond Core**
*Drilling*
***For All Minerals***
**Tinney Drilling Co.**
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**PROSPECTING, SAMPLING**
**BLAST HOLES & CLAY PITS**
**JUDD & SON**
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**CORE DRILLING**
ANYWHERE
*We look into the earth*
**PENNSYLVANIA**
DRILLING COMPANY
PITTSBURGH, PA.

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## POSITION WANTED

CHEMIST with 13½ years in cement industry desires position as CEMENT MILL CHEMIST. Just released from Navy and will accept position immediately.

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***Quarries***
***Crushing Plants***
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***Storage Methods***
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***Consulting Engineer***
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**Phone 1828**

***Operation***
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## WANTED CEMENT CHEMIST

In a dry cement plant. State training, experience if any. Give references and how soon available or any other information.

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## WANTED—ENGINEER

Eastern Portland cement manufacturer desires resourceful and agressive young engineer with mechanical or civil engineering training for plant layout, construction, and maintenance. Applications from veterans preferred. In reply, state complete information in regard to education, experience, and personal information to

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## WANTED QUARRY FOREMAN

MAN CAPABLE OF WORKING LABOR AND EXPERIENCED IN QUARRYING SEMI-HARD AGRICULTURAL LIMESTONE.

**DERMOT SHEMWELL & SONS**
**ALBANY, GEORGIA**

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## WANTED — SUPERINTENDENT

For an Agricultural Limestone Pulverizing Plant located in Northeastern Ohio. Prefer one familiar with Bradley-Hercules Mill. No quarrying experience necessary. All replies will be kept in strict confidence.

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## SUPERINTENDENT WANTED

Portland cement manufacturer has opening for Plant Superintendent. Permanent Position with old established company. Our own people know of this ad. In replying give age, education, experience, salary requirements and references. Write

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## WANTED—SUPERINTENDENT

Capable, experienced, young man to handle production and maintenance in year-round agstone and crushed stone operation in Southern Indiana. Reply, giving age, education, experience, and salary expected in first letter. Our people know about this ad. Write to

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## WANTED TO RENT

Firm with conveyor equipment to produce and load gravel on boats at the rate of 900 tons per hour.

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**P. O. Box 85 Mason, Michigan**

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## WANTED

Used bulk cement bin with elevator and batcher.

**ADAMS CONSTRUCTION COMPANY**
411-417 N. Main St. Janesville, Wisc.

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## WANTED

Number 7 Kent Maxicon Mill.

**STRASBURG LIME COMPANY, INC.**
**Strasburg, Virginia**

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## WANTED

All types of tractors, trenching machines and shovels.

**AIR COMPRESSORS RENTAL COMPANY**
19615 Nottingham Road Cleveland 10, Ohio
Telephone: IVanhoe 0556 or GA 0600

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## WANTED

One 2½ or 3 yd. Electric Shovel
One 1½ yd. Diesel Crane
One ¾ yd. Diesel Shovel

**W. P. HEINEKEN**
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## WANTED TO BUY

24 x 36 Butterworth and Lowe Jaw Crusher or other lightweight Jaw type 20" to 24" x 36" or Single Roll Stone Crusher 24" to 30" x 36".

Give full details and price.

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## WANTED—ASPHALT PLANTS

1 or 2 Ton Cap. Main Plant

1 Portable Road Plant

**E. J. BOYCE**
Pierce Bldg. St. Louis, Mo.

Or,

**THE DARIEN CORPORATION**
Darien Conn.

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## WANTED

**DIESEL ENGINE GENERATOR UNITS**
2000 H.P. to 4500 H.P.—Total—9000 H.P.
Prefer complete generating plant.
Engines only will be considered.

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24x50" Champion, 28x36" Webb City, 14x36" Cedar Rapids and Austin No. 440 24x36" Traylor Jaw Crushers.
One TY Traylor 2'4" and 2 Austin Model 105, one No.6 fine reduction and one No. 8 Superior McCully Gyratory Crushers.
One 36 x 40" Abbe Unlined Pebble Mill.
Four 4x10' Tyler Hummer Sgl. Deck Vib. Screens.
4—24"x18' Lewistown Screw Sand Washers.
Boyd "Special" 6-mold Dry Press with feeder. Model BB 4 Mold.
Barber Greene and Nelson Bucket Loaders.
One 25 Ton Gasoline Std. Ga. Locomotive.
One 30 Ton Diesel Std. Gas. Locomotive.
¾ yard P&H Crawler Shovel.
1 yard P&H Crawler Crane-Dragline.
7—10 yard Euclid Dump Trucks, Diesel Power.
4—19" Conveyors; 100, 105, 114 & 115' long.
17—Yale & Towne Lift Trucks 26½ x 84 & 114" long lift 11 to 14".

**Mid-Continent Equipment Company**
**710 Eastgate, Pa. 2290 St. Louis 5, Mo.**

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## FOR SALE
## LOCOMOTIVE CRANE

Type "KH" 45 Ton Revolving, Electric on 4 Standard Railroad 4 wheeled trucks 100' Boom, fully enclosed Steel Cab. April Delivery. Located—Eastern Penna.

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## NEW LIME DUST PLANT

We offer a high capacity complete portable outfit, six months old or less (except shovel). Lease can be assigned. Located northern Illinois. Good reason for selling. Immediate possession. Requires $70,000 investment. Terms can be arranged.

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## FOR SALE

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2—Orton 40 Ton Diesels—new 1943 Double Drums—75′ Boom.
1—Industrial 25 Ton—S. D.—Oil Fired—65′ Boom.

### COMPRESSORS

**New 1943 and '44**

2—Ingersoll-Rand 5000 CFM
1—Chicago 3000 CFM
2—Chicago 2200 CFM
All equipped with 3/60/2300 Synchronous Motors.

### TANKS

32—NEW Tank Car Shells 9900 Gal.

### LOCOMOTIVES

American—50 Ton—16″ x 24″ Saddle Tank, 0-6-0. S & A Air Brakes—Code Boiler—Ser. 67536—New 1927—Excellent condition.
2—Whitcomb 15 Ton Diesel—36″ or Std. Ga. New 1942.
1—Plymouth 45 Ton Diesel Electric Std. Ga. New July 1943.

### MISCELLANEOUS

1—Chi.-Pneu. 15 x 9 x 10—664′ Diesel Compressor.
1—Link-Belt K44—1½-Yard Backhoe Attachment.
Southwark 24″ x 15′—1500# Accumulator & 200 x 90 Draw Bench. Latest Models. Cheap. Write R. H. Boyer, Mgr., Equip. Division

**CHARLES DREIFUS COMPANY**

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## LIQUIDATION!

2—7′6″ x 65′ Rotary Kilns
1—6′ x 60′ Rotary Kiln
1—9′ x 70′ Rotary Kiln
2—4′ x 20′ Rotary Dryers or Coolers
1—Raymond 5 Roll Roller Mill, with 50 and 75 HP motors, fan, piping and collector
1—6′ x 40′ Rotary Dryer
1—Jaw Crusher 10″ x 20″
1—Allis Chalmers No. 5 Superior McCully Crusher
1—Allis Chalmers Crushing Rolls, 36″ x 16″
1—16″ Trough Belt Conveyor, 175′
3—Bucket Elevators, 30′ to 45′ centers
20—Centrifugal Pumps, 2″ to 8″
800—HP of Motors, 10 to 150 HP, 3/60/440 volt, with starters
6—Oliver Top Feed 8′ x 6′ Continuous Dewaterers. NEW.
4—Tyler, Deister, and Rotex Screens
3—Hardinge Hills, 4½′ x 16″, 4½′ x 24″, 2′ x 8″

*Partial List Only!*

**WIRE, PHONE, WRITE for full details.**

**BRILL** *Equipment Company*

**225 W. 34th Street** **New York 1, N. Y.**

**1—20-ton WHITCOMB 36″ Ga. Diesel Locomotive—rebuilt.**

1—32-ton Whitcomb Standard Gauge Gasoline Locomotive.

**1—80-ton BALDWIN Type 0-6-0 Standard Ga. with separate tender —rebuilt.**

**1—20-yd. WESTERN Air Dump Car, Vertical Cylinders, reconditioned.**

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**Philadelphia 2, Pennsylvania**

1—Type F Browning Gasoline Crawler Crane, 20 ton capacity, double drum with boom up to 90 ft. and 20 ft. jib.

7—Double Drum Electric Hoists with Swingers, both A.C. & D.C.—50 & 60 H.P.

2—50 Ton Steel Stiffleg Derricks, 65 ft. booms, can be made to 80 ft.

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1—Browning Type 8, Double Drum, 20 Ton Locomotive Crane, 50 ft. boom.

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**FOR QUICK DELIVERY**

## DIESEL GENERATOR SETS

1500 HP Nelseco
750 HP Superior
375 HP McIntosh-Seymour
120 HP Fairbanks-Morse
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MANY OTHERS AVAILABLE

**PORTABLE POWER UNITS**

International Harvesters, Budas, and other standard makes.

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**In Wisconsin**

Thew-Lorain 75-A Combination Shovel and Crane.

**In Missouri**

Thew-Lorain 75-A Shovel
P&H "400" Combination Shovel and Dragline.

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**MANLEY SAND COMPANY**
**Rockton, Ill.**

BINS: 1—30 ton, 3 compartment, 9′6″ x 15′, with or without 4 x 6 double deck vibrator screen.

BOILER: Erie City 125 H.P., self-contained, Economic type, ASME code, 150 lbs. pressure, complete with all fittings.

BUCKETS: Page 3½ yd. Dragline Bucket. 6—Stuebner, all steel, controllable, drop bottom, concrete Buckets, 32 cu. ft. capacity.

CARS: 2—2½ cu. yd., all steel, two-way, side dump, Koppel Cars, standard gauge.

LOCOMOTIVE CRANES: 1—45 ton, National Board boiler, double drums, air brakes. For sale or rent. 1—40 ton, electric, mounted on four MCB railroad trucks, 20′ track centers, 110′ boom; capacity 7 tons at 100′, 45 tons at 20′; current 3 phase, 60 cycle, 220-440 volt.

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REDUCTION CRUSHERS: Traylor 4 ft., type TY, with motor, V-belt drive, etc. complete. 1—New Holland 3030 Reduction Mill with 100 H.P. motor; new condition.

ROLL CRUSHERS: Traylor and Allis Chalmers Crushing Rolls, 12 x 20 and 18 x 42. New Holland Crushing Rolls 16 x 16 with 20 H.P. motor.

JAW CRUSHERS: 1—48x60, all steel, deep frame type with or without 150 H.P. slip ring motor and controls. Also, sizes 12x24 to 48x60.

SOFT STONE ELIMINATOR: Stedman Disintegrator, 42″ with or without 100 H.P. motor.

ENGINE: 1—Clyde 5 H.P. Electric Swinger Engine, powered with G.E. 5 H.P., 3 phase, 60 cycle, 440 volt, slip ring Motor with drum controller.

HAMMER MILL: Dixie Mogul 20 x 24, V-belt drive, with breaker plate and extra hammers.

GAS HOIST: Clyde two drum, with swinger, 50 H.P. Climax motor.

LOCOMOTIVES: 1—Lima 80 ton, steam, 6 wheel, Switcher with tender, thoroughly modern, excellent condition. Sale or rent. 2—80 ton, standard gauge, Electric 600 volt, D.C., dual controls, collecting device, powered with four 250 H.P. motors, air operated pantograph; thoroughly modern, new condition.

VIBRATOR FEEDER: Jeffrey type FB-4, size 47″ x 84″, complete with M.G. set. Jeffrey-Traylor 6′ x 6′, open pan deck, powered by four No. 5 heavy M-4 motors, including motor generator equipment for 440 volt, 3 phase, 60 cycle operation; capacity 1500 tons of earth and stone per hour.

COMPRESSOR: 20 x 12 x 14, 250 H.P. synchronous motor, 5 step control, New 1941, used six months.

SHOVELS: Bucyrus Erie 120-B, Ward Leonard control equipment, 3 phase, 60 cycle, 2300 volt. Marion model 37, steam, 2 yd. Bucyrus Erie B-2, steam, ⅞ yd.; suitabel for quarry use.

COMPLETE SAND & GRAVEL PLANT, including 12″ electric Dredge, with cutter, bins, scale, pipe, etc. Send for complete inventory.

SCREENS: Robins, Link Belt, simplicity, Nordberg, Telsmith, Traylor, all sizes.

PULVERIZERS: 3—Raymond, 5 roll, low side, Mills with #11 fan cyclone separator.

SCRAPER: LeTourneau 6 yd., model J6, 8 yd. capacity heaped; two tires, front; four rear, size 10 x 20.

TRACTORS: Lynn 20 ton, 6 cylinder Hercules engine, rear dump, steel and wood body. Model 75, diesel, Caterpillar, serial 2E972, with motor B82R, La-Plante-Choate Bulldozer model R8C, LeTourneau power control unit.

TRUCKS: Euclid 18FD, 15 ton capacity, 10 yd. body, end dump, heavy duty, 200 H.P. Cummins, supercharged, Diesel Motors; tires—front 12 x 24, 16 ply; tires—rear 14 x 24, 20 ply; built December 1942.

OVERHEAD ELECTRIC CRANE: 1—7½ ton Shepard, four motor, bucket operating, 36′ span, 550 volt, D.C., cage control.

MINE HOISTS: 1—150 H.P., drum 72 x 72″. 1—450 H.P., drum 10′ dia., 7′ face. 1—600 H.P., 96″ dia., 116″ face. 1—120″ dia. x 120″ face, with 500 H.P. motor. All 3 phase, 60 cycle, 2200 volt.

TRUCK SCALE: Fairbanks 48,000 lbs. capacity with 9′ x 24′ platform.

TRANSIT MIX TRUCKS: 4—Federals, 2—Whites, with 4 cu. yd. Mixers, 1942 models.

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**Lansdowne Theatre Building**
**LANSDOWNE, PA.**
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544—Centers 24", 6 Ply Rubber Belt Conveyor, wood frame, 30" x 26" tail pulley with take ups. No Belt. Manufactured by Stephens-Adamson Mfg. Company, Aurora, Ill.

1—Size 18" x 30" Belt Drive, Geared Stone Crusher, Ser. #633, Mfg. by Pennsylvania Crusher Co.

1—92' Centers, 30" Steel Feeder Conveyor. Manufactured by Stephens-Adamson Mfg. Co., Aurora, Ill.

1—36" x 42" x 42"—¼" Steel End with Hopper Bottom.

1—62'0" Centers Bucket Elevator, 7" Channel Frame, 24" Rubber Belt with 24" x 15" x 10" Steel Buckets, 24" centers. Manufactured by Stephens-Adamson Mfg. Co., Aurora, Ill.

1—60" x 8' Hum-mer Shaker Screen, Type 39. Manufactured by W. S. Tyler, Cleveland, Ohio.

1—Air Bag Filter with 3—36" x 9" Receivers. Manufactured by The Northern Blower Company.

1—#45 Clarage Type SP Steel Plate Drive Exhauster, Top Vertical Discharge Ser. #12784. Manufactured by Clarage Pan Company, Kalamazoo, Michigan.

1—30' Centers Bucket Elevator, 7" Channel Frame, 24" Rubber Belt with 24" x 15" x 10" Steel Buckets, 24" Centers. Manufactured by Stephens-Adamson Mfg. Co., Aurora, Ill.

1—Size SX4 Pennsylvania Stone Crusher, Ser. #743. Manufactured by Pennsylvania Crusher Company, Philadelphia, Pa.

**INDIANA LIMESTONE COMPANY, INC.**
**Bedford, Ind.**

## GOOD USED EQUIPMENT

Fairbanks 150 ton RR Track Scale
9' Clearfield Wet Pan, Morse Silent Chain Drive
National 10 ton, Single Drum Winch, arr. for direct motor drive
86" Sturtevant Exhaust Fan
200 HP Westinghouse Slip Ring Motor 3/60/440 volts, 1160 RPM, with a starter
60 HP, Westinghouse type SK compound wound motor, 230 volts, DC, 680 RPM's
10 HP, P & H, Ball Bearing Crane Motor, 230 volts, DC, 675 RPM's

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**Jaw Crushers**—4"x8" up to 18"x36".
**Crushing Rolls**—16"x10" up to 54"x24".
**Gyratory Crushers**—No. 3, No. 12.
**Ring Roll Mills**—No. 0, No. 1, and No. 2.
**Swing Hammer Mills.**
**Rotary Fine Crushers**—Nos. 0, 1, 1½ and 2.
**Direct Heat Rotary Dryers**—3½'x25', 4'x30', 5½'x40', 6'x50', 7'x50'.
**Semi-indirect heat Dryers**—70"x35', 60"x30'.
**Cement Kilns**—3' up to 11' diameter.
**Hardinge, Marcy & Fuller-Lehigh Mills.**
**Raymond Mills**—Nos. 00, 0, 1, 4 & 5 Roll.
**Tube**—Rod and Ball Mills—3' to 6' diameter.
**Vibrating Screens**—Air Separators.
**Lime hydrating plant.**
**New Dryers built for all purposes.**

**W. P. HEINEKEN**
227 Fulton St., N. Y. Tel. Barclay 7-7298

25 ton Locomotive Cranes, Ohio, American, Orton.
25 ton Ohio Gasoline Locomotive Crane.
35 ton Steel Stiffleg Derrick, 120' boom.
25 ton Whitcomb gas locomotive, new 1942.
30 ton Whitcomb diesel locomotive, new 1942, Caterpillar D-17000 engine.
48 x 72" Buchanan Jaw Crusher
18-20 yard Koppel Dump cars, standard gauge.
500 and 900 ft. Portable Air Compressors.
Steam and Gasoline Hoists, all sizes.
50 to 90 HP Vertical Firebox Boilers.
Heavy Duty Diesel Engines 60 to 600 HP.
Steel Sheet Piling—various lengths and sections.
Pile Hammers and Extractors. All sizes.
These items in Stock—For Sale or Rent.

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## NEW DIESEL GENERATORS

4—200 KW 3/60/400 V. Cleveland
1—167 KW 3/50/400 V. G.M.
4—50 KW 3/60/240 V. Cummins
10—25 KW International, 3/60/230 V.
8—15 KW 3/60/220 V. Hill
5—3 KW, 110 V. Lister

## NEW DIESEL ENGINES

4—150 H.P. Hercules
8—60 H.P. Chrysler

## NEW GASOLINE GENERATOR UNITS

37 — 3 — 5 — 10 — 15 — 25 & 30 KW

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**R. C. STANHOPE, INC.**
60 East 42nd St. New York, N. Y.

## STONE CRUSHERS

15 x 24, 18 x 32, 24 x 36.

## COMPLETE STONE CRUSHING PLANT

including:
24 x 36 crusher, reduction mill, gyratory crusher, bucket elevators, screens, etc.

## PUMPS

4" and 6", centrifugal, gas driven. Rebuilt—very low price.

**THE INDUSTRIAL EQUIPMENT CORP.**
705 First Nat. Bk. Bldg., Pittsburgh 22, Pa.
Warehouse: Carnegie, Pa.

## DEMPSTER DUMPSTERS

Model 150-B

## BROOKS LOAD LUGGERS

Model 150-A—CH-150 & 200

Immediate delivery of above hoists and buckets in good used condition.

**GENERAL TRADERS**
2675 Grand Ave. Chicago 12, Ill.

## FOR SALE

6—New Osgood Standard Model 200 TC ½ yard cranes for truck mounting.

Complete with buckets and many extras and spare parts.

These cranes were built for the Army.

We offer them at a considerable saving.

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## PRICED TO MOVE!

50-ton Baldwin 2-6-0 steam locomotive
12-ton Midwest Gasoline Switcher
Warco Motor Grader, Diesel Powered
Worthington Portable Air Compressor
Allis-Chalmers Pull Grader
Details on request. Write, wire or call

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3—#19 Kennedy Van Saun fine reduction crushers complete with drive & 25 H.P. G. E. Motors.

1—#37-S Kennedy Van Saun fine reduction crusher complete with 60 H.P. G. E. Motor, vertical drive including motor, sheaves and V-Belts.

Can have immediate delivery.

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—●—

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| 150 | Wtg. | CW | 440 | 580 |
| 150 | G. E. | I-M 3b. | 2200 | 585 |
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| 36" | 6 | 1/8" | 1/16" |
| 30" | 6 | 1/8" | 1/16" |
| 30" | 5 | 1/8" | 1/16" |
| 24" | 5 | 1/8" | 1/32" |
| 24" | 4 | 1/8" | 1/32" |
| 20" | 5 | 1/8" | 1/32" |
| 20" | 4 | 1/8" | 1/32" |
| 18" | 4 | 1/8" | 1/32" |
| 16" | 4 | 1/8" | 1/32" |
| 14" | 4 | 1/16" | 1/32" |
| 12" | 4 | 1/16" | 1/32" |

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| Width | Ply | Width | Ply | Width | Ply |
|---|---|---|---|---|---|
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| 16" | 6 | 10" | 5 | 5" | 5 |
| 14" | 6 | 8" | 6 | 4" | 5 |
| 12" | 6 | 8" | 5 | 4" | 4 |
| 12" | 5 | 6" | 6 | 3" | 4 |

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| 1" | 50 " | 8.00 |
| | 25 " | 6.25 |
| 1¼" | 50 " | 12.00 |
| | 25 " | 7.50 |
| | 35 " | 10.50 |
| | 40 " | 12.00 |
| 1½" | 50 " | 15.00 |
| | 25 " | 10.00 |
| | 35 " | 14.00 |
| | 50 " | 20.00 |

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| I.D. Size | Length | per Length | Couplings |
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| ½" | 25 feet | $5.00 | $1.50 Pair |
| | 50 " | 10.00 | 1.50 " |
| ¾" | 25 " | 6.25 | 2.50 " |
| | 50 " | 12.50 | 2.50 " |
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1—18 ton Truck Crane, mounted on 8-14.00x20 pneumatic tires, Model 255-A, P. & H., equipped with Waukesha Type MZR gasoline engine, 55' steel boom, hydraulic controls. Lifting capacity 18 tons. Manufactured by Harnischfeger Corp., new in 1941. USED FOUR MONTHS ON ONE JOB. With this Crane we can also include a crawler mounting with which this crane was originally furnished.

### SHOVEL

1—1 yd. P. & H. Model 600-A Shovel, gasoline, fitted with new crawler treads.

### GOOD USED EQUIPMENT—QUICK SHIPMENT RAYMOND PULVERIZERS

2—4 roll Raymond High Side Pulverizers, each equipped with air classifier, one of the "whizzer" type; Raymond exhauster, cyclone collector and inter-connecting piping. For products as fine as 99.9%—325 mesh, with coarser adjustments.

2—No. 0 Beater type—equipped as above—but including automatic throwout attachments and motors.

5—Nos. 3, 1, 00 and 0000—Beater types.

2—No. 70 "Imp" Coal Pulverizers; also No. 45, No. 55 and two Bowl Mills.

### BRIQUETTE PRESS

1—Komarek-Greaves, two rolls, 32" dia. x 24" face, with extra shafts and rolls. Rated on coal—25 t.p.h.

### CRUSHING ROLLS

1—24"x40" Penna. Crusher Co. Single Roll, also 24"x24" Jeffrey, 24x28" Mead-Morrison, 36"x60" Fairmount—all single roll.

2—36"x16" Allis-Chalmers Type "B" double roll, also 24x14", 42x16" and 54x20" A-C.

### DIRECT HEAT ROTARY DRYERS

2—4'x30' American Process, ⅜" shells, excellent condition. Now at Anniston, Ala., and must be removed and shipped quickly. Priced accordingly.

1—5x30' Cummer, mounted on I-beam frame, with furnace, etc.

2—6'x30' Ruggles-Coles, ⅜" shells, for single or double shell operation.

### JAW CRUSHERS

1—9"x15" Allis-Chalmers, Blake type.
1—18x36" Farrel-Bacon, Type B.
2—24x36" Traylor, Type A.
1—30x42" Farrel-Bacon, Type B.
1—22x50" Champion.
1—36x54" Buchanan.

### HARDINGE CONICAL MILLS

4—6'x22", 6'x36" and two 8'x30" Pebble Mills, all silex lined, continuous.
1—5'x22" Ball Mill, iron lined.
1—6'x12' Rod Mill, straight side, iron lined.

### AIR SEPARATORS

5—30", 5', 6', 8' and 14' dia.
1—14' dia. Sturtevant.
1—Model BX-100 Sutton, Steel & Steel Table.

### VIBRATING SCREENS

1—Battery of two 3'x5' Tyler Hummers, Type No. 31, TRIPLE DECK, with gen. set.
1—Battery two Tylers, No. 33, single deck.
3—Tyler 4'x5', No. 37, single deck.

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17-19 PARK ROW NEW YORK, N. Y.
Shops and Yard at Newark, N. J., cover eight acres.

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Air Compressors
Blowers & Ventilating Equipment
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Concrete Mixers
Pavers & Placers
Mine & Elevator Hoists

5—Model 60 Conway Mucking Shovels 36" gauge, dipper cap. 13½ cu. ft. 5 loading cycles per min. loading cap. 70 CFM, conveyor belt 28" wide, cap., 200 CFM, tramming speed forward 176 FM, reverse 120 FM, radius of minimum curve 20', machine powered by 60 HP U. S. Ball Bearing motors, 3/60/440.

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| 1 | Ton Yale & Towne, BB Spur Geared..... | 69.50 |
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**MAXIMON MACHINE COMPANY**
801 N. Logan Blvd. Altoona, Penna.

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## SPECIAL OFFERING

1—New 10" Superior McCully (Allis Chalmers) steel frame fine reduction gyratory crusher with 100 HP electric motor.

1—Factory remanufactured Acme 16" x 32" solid steel frame jaw crusher.

1—New Acme 14" x 26" Style D solid steel frame jaw crusher.

2—#6 McCully gyratory crushers in good running condition; just taken from service.

**ACME ROAD MACHINERY COMPANY**
**Frankfort, New York**

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## USED CRUSHING EQUIPMENT

1—Cedarrapids Portable Crushing Plant, 1036 Jaw, rolls, power, pneumatics.
1—Gilson "15" Pulverizer Plant w/power, etc
1—Primary Crusher w/1226 Jaw, power unit, 3-axle chassis w/under conveyor, cheap.
1—Cedarapids "1824" RB Jaw Crusher.
1—Portable Conveyor, 24"x50' w/LeRoi 8 HP. New Belt.
1—Eagle Bucket Loader. NEW. Truck-mounted.
1—Vibrating Screen, 3'x8'. New.
1—Universal 36"x5' Vibrating Screen. Used.
1—Universal 30' Bucket elevator line.
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## SHOVELS & CRANES

1—Link-Belt Speeder "K-360" 1½ yd. Dragline.
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1—Osgood 1¼ yd. shovel, w/crane boom.
1—Lorain "55" 1 Yd. Shovel.
1—General ¾ yd. Shovel—Drag.
1—Speeder "B-1" ½ Yd. Shovel-Drag.
1—Universal ½ yd. truck crane.
1—½ yd. truck crane 3 axle truck.
1—Insley "K-10" ⅜ Yd. Dragline.
1—Bucyrus-Erie "10B" ⅜ Yd. Shovel-Drag.
1—Link-Belt Speeder ¾ yd. drag bucket. NEW.
1—Hendrix, ⅝ yd. drag bucket. NEW.

## POWER UNITS

2—Minneapolis-Moline 88 HP gas power units. NEW.
1—Minneapolis-Moline 38 HP Power Unit. New.
1—Minneapolis-Moline 26 HP Power Unit. New.
1—Minneapolis-Moline 250 HP Used Power Unit.
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1—Waukesha-Hesselman 46 HP new engine.
20—Briggs & Stratton 6 HP gas engines. New.

## AIR EQUIPMENT

2—Davey "210D" New Compressors.
1—Cleveland "DR-30" NEW Wagon Drill.
3—Wayne 7 cu. ft. new shop compressors.
2—Wayne 2.2 cu. ft. new shop compressors.
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1—"Caterpillar" 40 Diesel Bulldozer.
1—Highway Cinder Spreader. NEW.
1—Kohler 1500-Watt Lite Plant. NEW.
1—Homestead "JMI" New Hypressure Jenny.

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2—315 cu. ft. 100# pres. Ingersoll Rand, model 315 and 315A portable Air Compressors with 105 HP Waukesha Oil Engines complete with accessories.

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**FOR SALE**
1—10 Ton Morgan O.E.T. Crane with Motors
2—600 HP, 200# P. ASME Code WT Boilers
1—75'x140' Steel Building—4 yrs. old
1—25"x40" & 24"x36" Jaw Crushers
1—210 HP F-M Diesel Engine Generator Set
1—½ & ¾ yd. Shovels, Elec. & Gas
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Voltage Regulators — Burlington Prompt Del.
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LIMA 101 GAS SHOVEL
1¾ Yd.—good condition.....$8500
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110 Volt, A.C. "Homelite".....$275
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**FEEDER**
Six foot centers
Flight strips—30" wide (with extra new heavy duty flight strips)
22" clear feed
Hopper, sprockets and chain in good condition
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Quarry complete for production of Ag-stone and State specification road stone; practically new oil engine, large air compressor, Williams Hammer Mill, bins, etc., ready to go. Write or visit
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125 H.P. G.M. 6 cylinder Diesel power unit.
85 H.P. Waukesha Hesselman Diesel power unit.
9x36 portable Universal crushing plant, with set of rolls, powered by Caterpillar Diesel complete.
105 Northwest combination shovel and crane.
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8x24 Universal crusher.
12x36 Cedar Rapids roller bearing crusher.
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**FOR SALE**
1—24 Telsmith Belt Type Bucket Elevator 12"x10"x50 feet, with steel frame.
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8"x24" UNIVERSAL CRUSHER
Truck mounted with bucket elevator
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Truck mounted with bucket elevator
2—CU. YD. PAGE DIESEL DRAGLINE
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**FOR SALE**
A 4' by 4' Robins vibrator screen with gasoline power complete. Price $200 F.O.B. our plant.
Also 60" by 40' long sand drag, complete except for box and power. Price $650 F.O.B. our plant.
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**FOR SALE**
1—Steam Hoist, with 25 H.P. Boiler.
3—Drums, and swinger.
1—Clam Shell ¾ yd. Bucket.
1—Stiff Leg derrick, with
Timber 14 x 14,
Beam 65 foot.
Mast 40 ft.
Legs 45 ft.
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Pocomoke City, Maryland

## FOR SALE

1—¾ Koehring Combination Crane, Dragline & Shovel
**REITH-RILEY CONSTRUCTION CO.**
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## FOR SALE

One new 48"x10' Jeffrey-Traylor vibrating feeder. Operates on 440 V., 60 C., 1 P. generator. For full particulars, contact
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14 ft. dia. rubbing bed. Complete and in excellent running order. Plate has recently been planed. $500 f.o.b. plant, Westmont, New Jersey.
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## 26 & 60 IN. CONVEYOR BELTS

6600 Ft. New 26 In. 5 Ply.
2200 Ft. Like New 60 In. 10 Ply.
IMMEDIATE SHIPMENT
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Locomotive: American, Steam, 16" x 24" Cylinder 6 wheel Saddle Tank, Built new 1927 National Board 180# Boiler.
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¼ Yd. P & H Crane
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1½ Yd. P & H Crane Model 500
½ Yd. Owen Digging Bucket
**"STONE — the CRANE MAN"**
2457 Woodward Ave., Detroit 1, Michigan

## FOR SALE — BARGAIN

2—Allis-Chalmers Gyratory Rock Crushers
8K — 6D
**M. S. ROSEN**
12 E. 44th St. — New York 17, N. Y.

1 Yd. Northwest Gas Crane Model 4
⅜ Yd. Bearcat Jr. Comb. Shovel-Crane
80 Ton American Locomotive 0-6-0
Pullshovel Attach. for Lorain 77, 75A or 75B
50 H.P. Electric Hoist
1 Yd. and ½ Yd. Dump Buckets
1 Yd. Round Shaft Bucket
Shovel Attach. for 41B Bucyrus-Erie
10 Ton Buf-Spr. Roller-Gas-3 Wheel
70' boom for Northwest Model 8
1 Yd. Owen Type D Clamshell Bkt.
1 ¼ Yd. Williams Clamshell Bkt.
Shovel Attach. for Northwest Model 104
**J. T. WALSH**
Brisbane Bldg. — Buffalo 3, N. Y.

## FOR SALE

Lorain 75A—shovel attachment
Northwest 6—shovel attachment
Lorain 30—⅛ yd. crane with digging clamshell bucket
P & H 450—⅞ yd. comb. shovel-dragline
Northwest 6—1½ yd. comb. shovel-dragline
Lima 603—1½ yd. comb. shovel-dragline
Marion Electric—6 yd. shovel with 80' boom Caterpillar Tractor D6 with buildozer
Eagle Log Washer—sand and gravel—40 yds. per hour.
Diamond Model 36 Gravel Crushing and Screening Plant in fine condition—complete with extra parts.
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## CRUSHERS - ELEVATORS SCREENS - CONVEYORS

1—7½"x13" Champion Jaw Crusher.
2—9"x15" Champion Jaw Crusher
1—10"x20" Champion Jaw Crusher.
3—12"x26" Champion Jaw Crusher
1—12"x20" Buchanan Jaw Crusher.
1—4½" Traylor Gyratory Crusher.
1—No. 2F Telsmith Gyratory Crusher.
1—S-A-9" loop Redler Elevator.
**JOHNSON & HOEHLER, INC.**
Lansdowne, Penna.

## Crushers, Rolls, Mills

10"x16" Traylor type H Jaw Crusher
12"x22" Acme type D Jaw Crusher
9"x15" Wheeling No. 2½ Jaw Crusher
A-C Gyratory 3-D Reduction Crusher
11" Traylor Bulldog Gyratory Crusher
16"x42" A-C type B Double Roll Crusher
20"x16" Stedman Heavy Duty Roll Ring Crusher
No. 2 Williams Semi-Vulcanite Hammermill
No. 0 Sturtevant Mill Rotary Fine Crusher
Type 33 Furnace Engr. Simplex Coal Pulverizer
No. 16-40 Gruendler Aristocrat Peerless Grinder
8 Tons Steel Crushing Balls, 1" to 2" sizes

## Vibrating & Revolving Screens

4'x10' 2-deck Robins Gyrex Vibrating Screen
3'x6' 3-deck Simplicity Vibrating Screen
4'x9' 1-deck Leahy Double Vibrating Screen
4'x7½' 1-deck Robins Perfex Shaking Screen
3'x5', 4'x5' & 4'x7' 1-deck Tyler Hummers
15-cycle Tyler Generators for Hummer Screens
Revolving Screens: 3'x11', 4'x22', 5'x18'
S-A Conical Screens: 28" & 44" diam., 54" long

## Conveyors & Accessories

2—20" Dings Magnetic Belt Conveyors, 5' c.
18" to 30" diam. Magnetic Pulleys, 18-30" wide
20", 30" & 36" Belt Conveyors, plain bearings
Conveyor Pulleys, drives & takeups to 36" wide
20"x60' Slat Conveyor, roller chain
16"x42' Scraper Conveyor, Steel Frames Trough
48"x1600' Prewar 8-ply Conveyor Belt
Belt Trippers for 14"—16"—18"—20"—24" Conveyors
Gravity Roll Conveyors, 6" to 20" widths
Merrick Weightometer for Belt Conveyor

## Bucket Elevators & Accessories

10"x50' Belt Bucket Elevator, Enclosed
12"x50' Chain Bucket Elevator, Enclosed
6" to 20" Enclosed & Open Bucket Elevators
10"x48' Belt Bucket Elevator, Continuous
14"x50' Chain Bucket Elevator, Continuous
6"x26' Chain Bucket Elevator, Open Type
10", 16" & 18" Elev. Buckets, C-type Galvanized

## Miscellaneous

Rehandling Clamshell Buckets 1, 1½, 2-yds.
107' & 529' Chicago Belted Air Compressors
Single and Double Drum Electric Hoists
36"-g. Gasoline Locomotives, 4 & 8 tons
24" & 36"-g. Side and End Dump Cars
Gear Reducers, Motors, Elec. Carpullers, Pumps
1500' Steel Bushed A-121 Eng. Chain

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**BUY WITH CONFIDENCE**
**Dependable Used Equipment**

**Late Type Electric Welders**
Wilson Bumble Bee 300 Amp AC

**GASOLINE ENGINES**
4—Waukesha 24 HP, 1450 to 1800 RPM 3½ x 3, 4 cylinder
1—Waukesha 29 HP, 1200 RPM, 3⅝ x 4½
Rebuilt and Guaranteed

**EIMCO HEAVY DUTY BALL MILL**
6'-6"—New 1942—Attractively Priced

**ELECTRIC HOISTS**
½ Ton Yale & Towne AC
3 Ton Box, 220 volt AC
5 Ton Shepard—550 volt DC
Electric Motors Rebuilt and Guaranteed
1½ HP to 200 HP—Immediate shipment from stock.

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Agriculture Limestone Plant, 21 x 38, Austin-Western Crusher 105 HP Waukesha Motor and Feeder mounted v Belt drive Ball Bearing.
36 x 60 Williams Hammermill ball bearing 210 HP Twin City Power unit v belt drive mounted.
60 ft. and 75 ft. Barber Greene conveyors, electric motor drives.
3 x 12 Seco Double deck screen, electric motor driven.
75 Ton double Bin Caterpillar 30 KW generator for motors.
Could include ¾ yd. General combination. Also 1 yd. Osgood combination. Reason for selling, installed larger plant.
2 totally enclosed Bucket Elevators, 18 in. buckets 25 & 30 ft. suitable for lime or cement nearly new. A lot of this equipment run only year—now in operation.
3 x 8 Vibrating double deck Screen.
50 x 36 ft. paddler coal bunker—all steel.

**ROCKY FORD LIMESTONE COMPANY**
**Lincoln, Illinois**

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### AIR COMPRESSORS
**BELTED:** 355, 528, 676, 1000, 1300 & 1570 Ft.
**ELECTRIC:** 478, 676, 807, 1302, 1722 & 2850 Ft.
**DIESEL:** 105, 315, 420, 603, 807 & 1000 Ft.
**PORTABLE GAS:** 110, 160, 220, 310, 540 & 1300 Ft.
**STEAM:** 49, 310, 528, 1300 & 2200 Ft.

### GRAPPLES & BUCKETS
50 Skips and Battleship Type, 2 to 6 Yds.
5 Owen & Bucyrus Rock Grabs.
**CLAMSHELL:** ½, ¾, 1, 1½, 2 Yds. & 3 Yds.
**ORANGE PEEL:** ¾, 1, 1½, 2 & 3 Yds.
**DRAGLINE:** ½, ¾, 1, 1½ & 2 Yds. Cap.

### CRANES & DRAGLINES
5 Ton BROWNHOIST, 30 Ft. Boom Gas.
12 Ton NORTHWEST 50 Ft. Boom Gas.
15 Ton P&H. 50 Ft. Boom Gas.
10 Ton Speedcrane, Gas. 50 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Locomotive.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.
2 Yd. Monighan Electric 60 ft. Boom Dragline.
3 Yd. Monighan Diesel Dragline.
5 Yd. Monighan Diesel Dragline.

### CATERPILLAR SHOVELS
½ Yd. P. & H. Gas & ⅝ Yd. Insley Gas.
⅝ Yd. KOEHRING Gasoline.
¾ Yd., 1¼ Yd., 2 Yd., 4 Yd. & 8 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas & 7/8B2 Steamer.
1½ Yd. BUCYRUS 41B Steamer.
1½ Yd. KOEHRING 601—Gas.
4 Yd. 120B Bucyrus Elec.

### DUMP CARS
46—KOPPEL, 1½ Yd., 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd. 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.

### BALL, ROD AND TUBE MILLS
6x8 Continuous Pebble Mill.
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5'x22" HARDINGE CONICAL Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
4x8, 8x6, & 10x9 Straight Ball Mills.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x16, 5x18, 5x22, & 6x22 Tube Mills.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 5x12 and 6x12 ROD MILLS.
4x16 Smidth Tube Mill Silex.
5½x20 Smidth Tube Mill Mang. Lining.
5½x18 P & M Tube Mill Silex.

### PULVERIZERS
No. 1 Sturtevant Ring Roll.
RAYMOND Auto. Pulverizer No. 0000, 0 & 3.
RAYMOND Imp Mills No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 Ft. Chaser Mill.

### SEPARATORS AND COLLECTORS
14 ft., 8 ft. and 12 ft. Separators

### ROLL CRUSHERS
36x60 Fairmont Single Roll.
36x20 Diamond Double Roll.
24x24 & 36x16 & 36x20 Diamond Double Roll.

### JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 20x11, 26x12, 30x15, 30x13, 36x30, 36x18, 36x14, 36x15, 36x9, 36x6, 38x18, 36x10, 36x24, 42x9, 48x36, 60x42, 84x66, 36x16, 9x36.
30x10 Gruendler Roller Bearing.

### CONE & GYRATORY CRUSHERS
18 in., 24 in., 30 in., 36 in. and 48 in. Symons Disc.
21K & 18N Allis Chalmers.
4—10 TZ Traylor 4 Ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory.
8 in. Traylor T. Gyratory, Telsmith No. 9.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.
KENNEDY: Nos. 19, 25, 27, 39 & 49.
16" Traylor.
7 Ft., 5 Ft., 4 Ft., 3 Ft. and 2 Ft. Symons Cone.

### MIXERS—PAVERS
5—1 yd. 2 yd. & 3 yd. Mixers.
3—Ransome & Rex 34E Dual Drum.
3—Koehring & Smith 27E Pavers.

### HOISTING ENGINES
7 Gasoline 15, 40, 60 & 100 H.P.
17 Steam 7x10, 8¼x10 and 10x12.
4 Electric 20, 35, 50, 60, 100 & 150 H.P.

### HAMMER MILLS
4 Jeffreys: 24x18-A, 36x24-B, 42x36-E & 42x48-B.
Williams No. 1 Jumbo Jr., & No. 6 Universal.
Nos. 4, 6 & 8 Williams Jumbo.
No. 36 Am. Ring Roll.
Greundler No. 6X.

### ASPHALT EQUIPMENT
7—750 & 1000 Gal. Distributor Trucks.
3—1000 Lb. & 2000 Lb. Pug Mixers.
6—3, 5, & 10 Ton Asphalt Rollers.
5—½, 1, & 2 Ton Asphalt Plants.

### DIESEL ENGINES
60 HP Fairbanks Morse.
140 HP Fairbanks Morse.
200 HP Atlas.
225 HP Chicago Pneumatic

### DIESEL GENERATORS
480 K.W. Cooper Bessemer 2400 v.
343 K.W. F.M. 3/60/480 v.
240 K.W. F.M. 3/60/2300 v.
300 K.W. Worthington 3/60/2400 v.
125 K.W. F.M. 250 v. D.C.
80 K.W. Busch Sulyer 2300 v.

### RAYMOND MILL
5 Roll High Side.

### CONVEYOR PARTS
**BELT:** 1000 Ft. 60 In., 700 Ft. 42 In., 600 Ft. 36 In., 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 297 Ft. 18 In., 1000 Ft. 14 In. & 16 In.
**IDLERS:** 36 In., 30 In., 24 In., 20 In., 18 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections.

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**ELECTRIC:** 2 Ton, 5 Ton, 8 Ton, 17 Ton & 40 Ton.

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**REVOLVING:** 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

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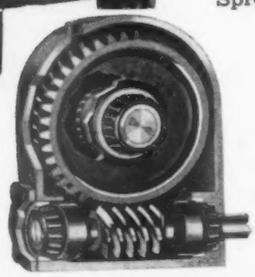

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APR 29 1947

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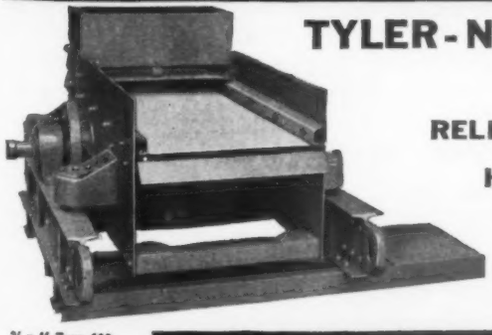

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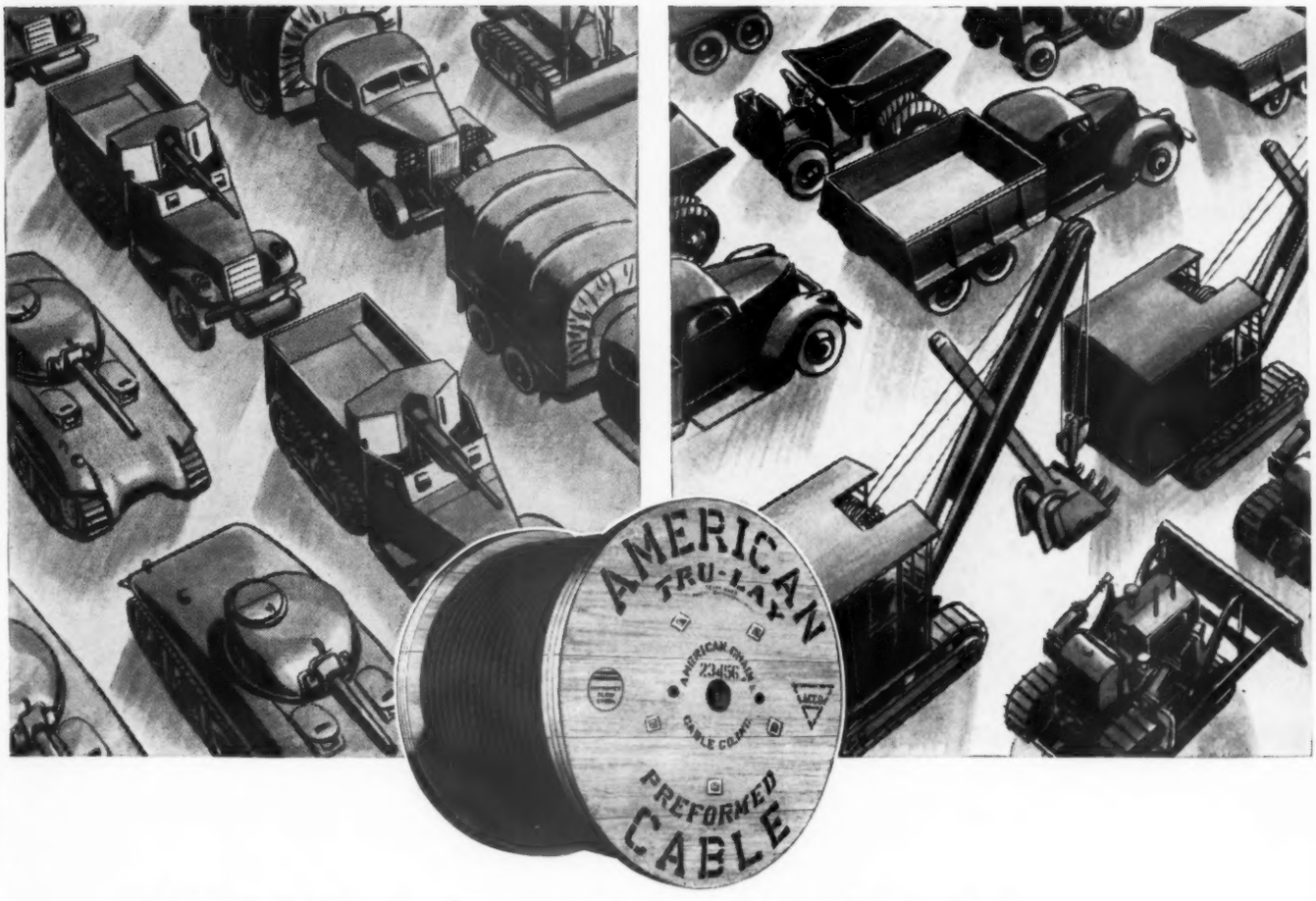


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